

BA

Semester 1

| | |
|--|-----------------------------|
| Course Title: Political history of Karnataka (BCE-3 to 10 CE) Part-1 | |
| Total Contact Hours: 39 to 42 | Course Credits: 3 |
| Formative Assessment Marks: 40 | Duration of ESA/Exam: 60 |
| Model Syllabus Authors: | Summative Assessment Marks: |

Course Pre-requisite(s): Political history of Karnataka (BCE-3 to 10 CE) Part-1

Course Outcomes (COs):

At the end of the course the student should be able to:

(Write 3-7 course outcomes. Course outcomes are statements of observable student actions that serve as evidence of knowledge, skills and values acquired in this course)

- ☐ Understand the continuity of Political developments and strategies.
- ☐ Analysis the importance of causes for the rise of regional political dynasties.
- ☐ Understand contextual necessities which influenced the era of political supremacy.
- ☐ Understand and describe the contemporary political history.
- ☐ Appreciate the confluence of diverse political elements.

Course Articulation Matrix: Mapping of Course Outcomes (COs) with Program Outcomes (POs 1- 12)

| Course Outcomes (COs) / Program Outcomes (POs) | DSC1 | DSC2 | DSC3 | DSC4 | DSC5 | DSC6 | OE1 | OE2 | SEC1 | SEC2 |
|--|------|------|------|------|------|------|-----|-----|------|------|
| Disciplinary Knowledge | X | x | X | x | x | x | x | x | | |
| Communication Skills | X | x | X | x | x | x | x | x | | |
| Critical Thinking | X | x | X | x | x | x | x | x | x | x |
| Problem Solving | | | X | x | x | x | x | x | x | x |
| Analytical Reasoning | X | x | X | x | x | x | x | x | | |
| Cooperation and Team Work | | x | X | x | | x | x | x | | x |
| Reflective Thinking | | x | X | x | x | x | x | x | x | x |
| Self-motivated Learning | | | X | x | x | x | x | x | x | x |
| Diversity Management and Inclusive Approach | X | x | X | x | | x | x | x | | |

| | | | | | | | | | | |
|---------------------------------------|---|---|---|---|---|---|---|---|--|---|
| Moral and Ethical Awareness Reasoning | X | x | X | x | x | x | x | x | | x |
| Lifelong Learning | | x | | x | x | x | x | x | | x |

Course Articulation Matrix relates course outcomes of course with the corresponding program outcomes whose attainment is attempted in this course. Mark „X’ in the intersection cell if a course outcome addresses a particular program outcome.

BA
BA Semester 1

Title of the Course: Political History of Karnataka (BCE-3 to 10 CE) Part-1

| Course 1 | | Course 2 | |
|--------------------------|----------------------------------|--------------------------|----------------------------------|
| Number of Theory Credits | Number of lecture hours/semester | Number of Theory Credits | Number of lecture hours/semester |
| 3 | 39 or 42 | 3 | 39 or 42 |

| Content of Course 1 | 39/42 Hrs |
|--|-----------|
| Unit – 1 Introduction | 13/14 |
| Chapter No. 1 Survey of sources- Pre historic culture | 04 |
| Chapter No. 2 The Early Alupas- The Satavahanas – Kadambas of Banavasi | 06 |
| Chapter No. 3 The Gangas of Talakad - Durvineetha | 04 |
| Unit – 2 The Age of Empires | 13/14 |
| Chapter No. 4. Chalukyas of Badami – Pulikesin – II | 04 |
| Chapter No. 5. The Rastrakutas – Amoghavarsha | 04 |
| Chapter No. 6. The Chalukyas of Kalyani - Vikramaditya VI-Kalachuries of Kalyani– Bijalla-II | 06 |
| Unit – 3 Formation of State | 13/14 |
| Chapter No. 7 Central And Provincial Administration. | 12 |
| Chapter No. 8. Map- The Chalukya Empire under Pulikesin - II Places – Badami, Aihole, Pattadakal, Banavasi, Kanchipuram, Mahakuta, Alampur, Talakadu | 02 |

Books for Reference:

- | | | |
|---|---|---|
| 1. K.R Basavaraja | - | “History and Culture of Karnataka” |
| 2. R.S Mugali | - | “Glimpses of Karnataka” |
| 3. P.B. Desai | - | “A History of Karnataka” |
| 4. H.V Shrinivasa Murthy and R. Ramakrishnan | - | “ A Concise History of Karnataka” |
| 5. A. Sundara (Ed) | - | “Karnataka Charitre” Volume I |
| 6. B. Surendra Rao (Ed.) | - | “Karnataka Charitre” Volume II |
| 7. R.R Diwakar | - | “ Karnataka Through the Ages” |
| 8. M. Chidananda Murthy | - | “Karnataka Shasanagala Samskrutika Adhyayana” |

9. S. Settar - “Halagannada – Lipi, Lipikara, Lipi Vyavasaya”
10. A.C. Nagesh - “Pracheena Karnataka Charithre”
11. Dr. Suryanatha U Kamath - History of Karnataka

Pedagogy

- ☐ Lecture Method – Class Room Teaching
- ☐ Learning Through Project work
- ☐ Collaborative learning strategies
- ☐ Use of Learning Recourses like
as Audio – Visual aids
Films
Documentaries
Visit to historical sites

Assessment:

Weightage for assessments (in percentage)

| Formative Assessment | | |
|--|---------------------|---|
| | Internal Assessment | Theory Part Semester End Examination |
| Internal Test | 15 | 60 |
| Assignments/ Seminar/ Field visit/ Lab practice | 15 | |
| Viva Voice | 10 | |
| Total | 40 | |
| Grand Total | | 100 |

Date:13.09.2021

Course Co-ordinator

Subject Committee Chairperson

Prof. R Rajanna

BA

Semester 1

| | |
|--|-----------------------------|
| Course Title: Cultural Heritage of India | |
| Total Contact Hours: 39 to 42 | Course Credits: 3 |
| Formative Assessment Marks: 40 | Duration of ESA/Exam: 60 |
| Model Syllabus Authors: | Summative Assessment Marks: |

Course Pre-requisite(s): Cultural Heritage of India

Course Outcomes (COs):

At the end of the course the student should be able to:

- ☐ Provide an insight about an extensive survey of heritage of India
- ☐ Familiarize Indian history and culture
- ☐ Expertize to analyse further development of culture of India
- ☐ Analyse the factor responsible for origin and decline of culture
- ☐ Provide the opportunity to understand the process of cultural development

Course Articulation Matrix: Mapping of Course Outcomes (COs) with Program Outcomes (POs 1-12)

| Course Outcomes (COs) / Program Outcomes (POs) | DSC1 | DSC2 | DSC3 | DSC4 | DSC5 | DSC6 | OE1 | OE2 | SEC1 | SEC2 |
|--|------|------|------|------|------|------|-----|-----|------|------|
| Disciplinary Knowledge | x | x | x | x | x | x | x | x | | |
| Communication Skills | x | x | x | x | x | x | x | x | | |
| Critical Thinking | x | x | x | x | x | x | x | x | x | x |
| Problem Solving | | | x | x | x | x | x | x | x | x |
| Analytical Reasoning | x | x | x | x | x | x | x | x | | |
| Cooperation and Team Work | | x | x | x | | x | x | x | | x |
| Reflective Thinking | | x | x | x | x | x | x | x | x | x |
| Self-motivated Learning | | | x | x | x | x | x | x | x | x |
| Diversity Management and Inclusive Approach | x | x | x | x | | x | x | x | | |
| Moral and Ethical Awareness Reasoning | x | x | x | x | x | x | x | x | | x |
| Lifelong Learning | | x | | x | x | x | x | x | | x |

Course Articulation Matrix relates course outcomes of course with the corresponding program outcomes whose attainment is attempted in this course. Mark „X’ in the intersection cell if a course outcome addresses a particular program outcome.

BA
BA Semester 1

Title of the Course: Cultural Heritage of India

| Course 1 | | Course 2 | |
|--------------------------|----------------------------------|--------------------------|----------------------------------|
| Number of Theory Credits | Number of lecture hours/semester | Number of Theory Credits | Number of lecture hours/semester |
| 3 | 39 or 42 | 3 | 39 or 42 |

| Content of Course 1 | 39/42 Hrs |
|---|-----------|
| Unit – 1 Introduction | 13/14 |
| Chapter No. 1 Meaning, Definition Historical Cultural Heritage-Concepts, Characteristics-types of Indian Cultural Heritage: Oral and Written traditions. | 10 |
| Chapter No. 2 Significance of fairs and festivals. | 04 |
| Unit – 2 Legends, Narratives and Cultural Ethos | 13/14 |
| Chapter No.3. Meaning, significance, forms and tradition of legends. Ramayana and Mahabharata: Tradition of Cultural Heritage; Panchatantra, Jataka. | 06 |
| Chapter No. 4. Traditional Performing Art, Folk dances and theatre: Bharata Natya Shastra: The Source of Performing Indian Classical Arts and other Indian classical dances as cultural Heritage | 08 |
| Unit – 3 Architecture and Built Heritage | 13/14 |
| Chapter No. 5. Important Monuments of India-Caves Shore Temple (Mahabalipuram), Aihole. Badami, Pattadakal. Ajanta, Ellora | 08 |
| Chapter No. 6. Important Monumental Centers of India Sarnath, Sanchi, Konark, Khajuraho, Hampi, Vijayanagar, Taj Mahal, Red fort. <i>Places of Historical importance :</i> Delhi, Agra, Nalanda, Saranatha, Sanchi, Hampi, Badami, Mahabalipuram, Ajantha, Ellora, Prayaga, Varanasi, Rameshwaram, Dwaraka, Konark, Khajuraho | 06 |

Books for Reference

- | | | |
|--------------------------|---|---|
| 1. S. Radhakrishnan | - | “Culture of India” |
| 2. K.T Achaya | - | Indian food: A Historical Companion, |
| 3. Banga, I. (Ed) | - | The City in Indian History : Urban Demography, Society and Politics. |
| 4. A.L Basham | - | The Wonder that was India. |
| 5. Sachin Shekhar Biswas | - | Protecting the Cultural Heritage |
| 6. N.K Bose | - | “Culture Zones of India” in culture and Society in India. |
| 7. S.Narayan | - | Indian Classical Dances. |
| 8. Gokulsing, K. Moti | - | Popular Culture in a Globalized India, |
| 9. Bhanu Shankar Mehta | - | Ramlila Varied Respective |
| 10. Rangacharya | - | The Natya shastra, English translation with critical Notes. |

Pedagogy

Knowledge: The student should acquire knowledge of terms, concepts, facts, events, symbols, ideas, conventions, problems, trends, personalities, chronology and generalizations, etc., related to the study of history. The student should be able to: recall, recognize, show and read.

Understanding: The student should develop understanding of terms, facts, principal events, trends, etc., related to the study of history. The student should be able to: classify facts, illustrate events, compare and contrast events, explain events, discriminate, identify, arrange facts, detect errors, interpret and extract.

Critical Thinking: The subject should enable the students to develop critical thinking. The student should be able to: identify, analyse, collect, select, draw and verify.

Practical Skills: The subject enables the students to develop practical skills helpful in the study and understanding of historical facts. The student should be able to: draw maps, charts, diagrams and prepare models, etc.,

Interests: The subject should enable the students to develop interest in the study of history. The student, on his own, should be able to: collect coins and other historical materials, participate in historical dramas and mock sessions of historical events, visit places of historical interest, archaeological sites, museums and archives, read historical documents, maps and charts, write articles on historical and other related topics.

Learning Outcome:

This course enables students to explore various aspects of cultural heritage and cultural diversity in historical perspective that discusses numerous cultural practices that have evolved over centuries. They will acquire knowledge of changing socio-cultural scenarios of India.

As well as they can gather knowledge about the cultural heritage, cultural forms and cultural expressions performing arts, fairs and festivals.

Assessment:

Weightage for assessments (in percentage)

| Formative Assessment | | |
|--|----------------------------|---|
| | Internal Assessment | Theory Part Semester End Examination |
| Internal Test | 15 | 60 |
| Assignments/ Field study/ Seminar/ | 15 | |
| Viva Voice | 10 | |
| Total | 40 | |
| Grand Total | | 100 |

Date:13.09.2021

Course Co-ordinator

Subject Committee Chairperson

Prof. R Rajanna

BA

Semester 1

| | |
|--|-----------------------------|
| Course Title: Cultural History of Karnataka (CE 3-CE 10) Part-I | |
| Total Contact Hours: 39 to 42 | Course Credits: 3 |
| Formative Assessment Marks: 40 | Duration of ESA/Exam: 60 |
| Model Syllabus Authors: | Summative Assessment Marks: |

Course Pre-requisite(s): Cultural History of Karnataka (CE 3-CE 10) Part-I

Course Outcomes (COs):

At the end of the course the student should be able to:

- ☐ Provide an insight about the cultural development of Karnataka.
- ☐ Familiarize Karnataka history and culture.
- ☐ Expertize to analyze further development of culture of Karnataka.
- ☐ Analyze the factors responsible for origin and decline of dynasties.
- ☐ Provide the opportunity to understand the process of cultural diversities.

Course Articulation Matrix: Mapping of Course Outcomes (COs) with Program Outcomes (POs 1-12)

| Course Outcomes (COs) / Program Outcomes (POs) | DSC1 | DSC2 | DSC3 | DSC4 | DSC5 | DSC6 | OE1 | OE2 | SEC1 | SEC2 |
|--|------|------|------|------|------|------|-----|-----|------|------|
| Disciplinary Knowledge | x | x | x | x | x | x | x | x | | |
| Communication Skills | x | x | x | x | x | x | x | x | | |
| Critical Thinking | x | x | x | x | x | x | x | x | x | x |
| Problem Solving | | | x | x | x | x | x | x | x | x |
| Analytical Reasoning | x | x | x | x | x | x | x | x | | |
| Cooperation and Team Work | | x | x | x | | x | x | x | | x |
| Reflective Thinking | | x | x | x | x | x | x | x | x | x |
| Self-motivated Learning | | | x | x | x | x | x | x | x | x |
| Diversity Management and Inclusive Approach | x | x | x | x | | x | x | x | | |
| Moral and Ethical Awareness Reasoning | x | x | x | x | x | x | x | x | | x |
| Lifelong Learning | | x | | x | x | x | x | x | | x |

Course Articulation Matrix relates course outcomes of course with the corresponding program outcomes whose attainment is attempted in this course. Mark „X” in the intersection cell if a course outcome addresses a particular program outcome.

BA
BA Semester 1

Title of the Course: Cultural History of Karnataka (CE 3-CE 10) Part-I

| Course 1 | | Course 2 | |
|--------------------------|----------------------------------|--------------------------|----------------------------------|
| Number of Theory Credits | Number of lecture hours/semester | Number of Theory Credits | Number of lecture hours/semester |
| 3 | 39 or 42 | 3 | 39 or 42 |

| Content of Course 1 | 39/42 Hrs |
|---|-----------|
| Unit – 1 Introduction | 13/14 |
| Chapter No. 1 Language and culture of Coastal Karnataka and Kodagu | 03 |
| Chapter No. 2 Alupa Land Grants | 05 |
| Chapter No. 3 Agriculture and Emergence of Agraharas – Education | 06 |
| Unit – 2 Social Conditions | 13/14 |
| Chapter No. 4. Caste Structure | 06 |
| Chapter No. 5. Conditions of Women | 08 |
| Unit – 3 Religion and Art | 13/14 |
| Chapter No. 6 Jainism and Buddhism in Karnataka. | 04 |
| Chapter No. 7. Saivism and Vaishnavism. | 05 |
| Chapter No. 9 Art and Architecture of Coastal Karnataka. | 05 |

Books for Reference

- | | | |
|----------------------------|---|---|
| 1. S. Settar | - | “Halagannada – Lipi, Lipikara, Lipi Vyavasaya” |
| 2. K.R Basavaraja | - | “History and Culture of Karnataka” |
| 3. R. Rajanna & A.C Nagesh | - | “Karnatakada Charithre” Volume I |
| 4. P.B. Desai | - | “A History of Karnataka” |
| 5. A. Sundara (Ed) | - | “Karnataka Charitre” Volume I |
| 6. B. Surendra Rao (Ed.) | - | “Karnataka Charitre” Volume II |
| 7. S. Settar | - | “ Halagannada; Bhashe, Bhasha Vikasa, Bhasha Bandhavya” |
| 8. M. Chidananda Murthy | - | “Karnataka Shasanagala Samskrutika Adhyayana” |
| 9. S. Rajashekara | - | “ Karnataka Architecture” |
| 10. K.A. Nilakanta Sastri | - | “A History of South India” |

Pedagogy

- ☐ Lecture Method – Class Room Teaching
- ☐ Learning Through Project work
- ☐ Collaborative learning strategies
- ☐ Use of Learning Recourses like
as Audio – Visual aids
Films
Documentaries
s

Visit to historical sites

Assessment:

Weightage for assessments (in percentage)

| Formative Assessment | | |
|---|---------------------|---|
| | Internal Assessment | Theory Part Semester End Examination |
| Internal Test | 15 | 60 |
| Assignments/ Seminar/ Project study/ Labpractice | 15 | |
| Viva Voice | 10 | |
| Total | 40 | |
| Grand Total | | 100 |

Date:13.09.2021

Course Co-ordinator

Subject Committee Chairperson

Prof. R Rajann

BA Semester 1

| | |
|---|-----------------------------|
| Course Title: Introduction to Archaeology | |
| Total Contact Hours: 39 to 42 | Course Credits: 3 |
| Formative Assessment Marks: 40 | Duration of ESA/Exam: 60 |
| Model Syllabus Authors: | Summative Assessment Marks: |

Course Pre-requisite(s): Introduction to Archaeology

Course Outcomes (COs):

At the end of the course the student should be able to:

- ☐ Understand the concept of Archaeology as an ancillary for study of history
- ☐ Help to study features of Archaeology in understanding history
- ☐ Familiarize the students to know about scope of Archaeology.
- ☐ Understand the various tools and techniques imbibed in Archaeology
- ☐ Study various schools of disciplines of Archaeology.

Course Articulation Matrix: Mapping of Course Outcomes (COs) with Program Outcomes (POs 1-12)

| Course Outcomes (COs) / Program Outcomes (POs) | DSC1 | DSC2 | DSC3 | DSC4 | DSC5 | DSC6 | OE1 | OE2 | SEC1 | SEC2 |
|--|------|------|------|------|------|------|-----|-----|------|------|
| Disciplinary Knowledge | x | x | x | x | x | x | x | x | | |
| Communication Skills | x | x | x | x | x | x | x | x | | |
| Critical Thinking | x | x | x | x | x | x | x | x | x | x |
| Problem Solving | | | x | x | x | x | x | x | x | x |
| Analytical Reasoning | x | x | x | x | x | x | x | x | | |
| Cooperation and Team Work | | x | x | x | | x | x | x | | x |
| Reflective Thinking | | x | x | x | x | x | x | x | x | x |
| Self-motivated Learning | | | x | x | x | x | x | x | x | x |
| Diversity Management and Inclusive Approach | x | x | x | x | | x | x | x | | |
| Moral and Ethical Awareness Reasoning | x | x | x | x | x | x | x | x | | x |
| Lifelong Learning | | x | | x | x | x | x | x | | x |

Course Articulation Matrix relates course outcomes of course with the corresponding program outcomes whose attainment is attempted in this course. Mark „X” in the intersection cell if a course outcome addresses a particular program outcome.

BA
BA Semester 1

Title of the Course: Introduction to Archaeology

| Course 1 | | Course 2 | |
|--------------------------|----------------------------------|--------------------------|----------------------------------|
| Number of Theory Credits | Number of lecture hours/semester | Number of Theory Credits | Number of lecture hours/semester |
| 3 | 39 or 42 | 3 | 39 or 42 |

| Content of Course 1 | 39/42 Hrs |
|--|-----------|
| Unit – 1 Introduction | 13/14 |
| Chapter No. 1 Definition – Scope – Nature | 03 |
| Chapter No. 2 Concepts – Artifacts – Assemblage – Industry – Culture -Layer | 05 |
| Chapter No. 3 Kinds of Archaeology – Ethno, Marine and Salvage | 06 |
| Unit – 2 Archaeology by Period | 13/14 |
| Chapter No. 4. Lower Paleolithic – Middle Paleolithic – Upper Paleolithic- Mesolithic – Chalcolithic – Bronze age – Iron Age | 05 |
| Chapter No. 5. Development in the Global Context – From Antiquarians to Scientific Archaeology – Finders Petrie- Pitt Riveres – Leonard Wooly. | 05 |
| Chapter No. 6. Archaeology in India – William Jones to Wheeler – The Allchins – S.R. Rao – Archaeological Survey of India – Department of Archaeology Government of Karnataka | 04 |
| Unit – 3 Exploration, Excavation and Analysis | 13/14 |
| Chapter No. 7 Identification of a site – field survey – sampling techniques – Application of scientific methods. | 05 |
| Chapter No. 8. Methods of Excavation – vertical and horizontal – Trenching – Gridding | 05 |
| Chapter No. 9 Excavation of burial mounds – Open Stripping – Quadrant method – Excavation of pits – Excavation of a typical site | 04 |

Books for Reference

- | | | |
|---|---|--|
| 1. Agrawal D.P | - | Archaeology in India |
| 2. Aiken M.J | - | Science based dating in archaeology |
| 3. Allchin Bridget And Raymond Allchin | - | Rise of Civilisation in India and Pakistan |
| 4. Atkinson RJC | - | Field Archaeology |
| 5. Basker .P | - | Techniques of Archaeological Excavation |
| 6. Chakrabarthi D.K | - | A History of Indian Archaeology from the beginning to 1947 |
| 7. Chakrabarthi D.K | - | Theoreftical Perspectives in Indian Archaeology |
| 8. Gosha .A | - | Encyclopaedia of Indian Archaeology |

- | | | |
|---------------------------|---|---------------------------------------|
| 9. Rajan .K | - | Archaeology, Principles and Methods |
| 10. Raman K.V | - | Principles and Methods in Archaeology |
| 11. Dr.Srinivas V Padigar | - | Principles of Archaeology. |
| 12. Dr Srinivas V Padigar | - | Puratattva Parichaya-(Kan) |

Pedagogy

- ☐ Lecture Method – Class Room Teaching
- ☐ Visit to Archaeological sites
- ☐ Learn techniques of excavations
- ☐ Collaborative learning strategies
- ☐ Learning about digging, Trenching and Exploration
- ☐ Collection and Preservation of Artifacts

Assessment:

Weightage for assessments (in percentage)

| Formative Assessment | | |
|---|---------------------|---|
| | Internal Assessment | Theory Part Semester End Examination |
| Internal Test | 15 | 60 |
| Assignments/ Seminar/ Project/Field study /Lab Practice | 15 | |
| Viva Voice | 10 | |
| Total | 40 | |
| Grand Total | | 100 |

Date:13.09.2021

Course Co-ordinator

Subject Committee Chairperson-

Prof. R Rajanna

BA

Semester 2

| | |
|--|-----------------------------|
| Course Title: Political History of Karnataka (CE11- 1750 AD) | |
| Total Contact Hours: 39 to 42 | Course Credits: 3 |
| Formative Assessment Marks: 40 | Duration of ESA/Exam: 60 |
| Model Syllabus Authors: | Summative Assessment Marks: |

Course Pre-requisite(s): Political History of Karnataka (C11- 1799 AD)

Course Outcomes (COs):

At the end of the course the student should be able to:

- ☐ Understand the rise and fall of Political dynasties in Karnataka.
- ☐ Familiarize with the patterns of administration.
- ☐ Analyze the traditional values and ethos of political development.
- ☐ Understand the rise and fall of regional variations.
- ☐ Study the complexities involved in polity of the time.

Course Articulation Matrix: Mapping of Course Outcomes (COs) with Program Outcomes (POs 1-12)

| Course Outcomes (COs) / Program Outcomes (POs) | DSC1 | DSC2 | DSC3 | DSC4 | DSC5 | DSC6 | OE1 | OE2 | SEC1 | SEC2 |
|--|------|------|------|------|------|------|-----|-----|------|------|
| Disciplinary Knowledge | x | x | x | x | x | x | x | x | | |
| Communication Skills | x | x | x | x | x | x | x | x | | |
| Critical Thinking | x | x | x | x | x | x | x | x | x | x |
| Problem Solving | | | x | x | x | x | x | x | x | x |
| Analytical Reasoning | x | x | x | x | x | x | x | x | | |
| Cooperation and Team Work | | x | x | x | | x | x | x | | x |
| Reflective Thinking | | x | x | x | x | x | x | x | x | x |
| Self-motivated Learning | | | x | x | x | x | x | x | x | x |
| Diversity Management and Inclusive Approach | x | x | x | x | | x | x | x | | |
| Moral and Ethical Awareness Reasoning | x | x | x | x | x | x | x | x | | x |
| Lifelong Learning | | x | | x | x | x | x | x | | x |

Course Articulation Matrix relates course outcomes of course with the corresponding program outcomes whose attainment is attempted in this course. Mark „X’ in the intersection cell if a course outcome addresses a particular program outcome.

BA
BA Semester 2

Title of the Course: Political History of Karnataka (CE11- 1799 AD)

| Course 1 | | Course 2 | |
|--------------------------|----------------------------------|--------------------------|----------------------------------|
| Number of Theory Credits | Number of lecture hours/semester | Number of Theory Credits | Number of lecture hours/semester |
| 3 | 39 or 42 | 3 | 39 or 42 |

| Content of Course 1 | 39/42 Hrs |
|---|-----------|
| Unit – 1 Introduction | 13/14 |
| Chapter No. 1 The Hoysalas - Vishnuvardhana | 07 |
| Chapter No. 2 Medieval Alupas | 07 |
| Unit – 2 Medieval Karnataka | 13/14 |
| Chapter No. 3. Vijayanagar – Dynasties | 06 |
| Chapter No. 4. The Bahamani States | 05 |
| Chapter No. 5. Regional Kingdoms during Vijayanagar. | 03 |
| Unit – 3 Post Vijayanagar | 13/14 |
| Chapter No. 6 Wodeyars of Mysore – Nayakas of Chithradurga – Nayakas of Keladi | 05 |
| Chapter No. 7. Minor Chieftains-Local Chieftains - Chowtas | 03 |
| Chapter No.8. Hyder Ali and Tippu Sulthan. | 05 |
| Chapter No.9.Map: The Vijayanagar empire. Places- Hampi, Tanjavur, Mangalore, Barkur, Penukonda, Tirupati | 01 |

Books for Reference

- | | | |
|-----------------------|---|--|
| 1. K.R Basavaraja | - | “History and Culture of Karnataka” |
| 2. P.B. Desai | - | “A History of Karnataka” |
| 3. Burton Stein | - | “ Vijayanagara” |
| 4. B. Sheik Ali(Ed.) | - | “Karnataka Samagra Charitre” Volume IV. |
| 5. B. Vivek Rai (Ed.) | - | “Pravasi Kanda Vijayanagara” |
| 6. G. Yazdani | - | “History of the Deccan” |
| 7. K. Satyanarayana | - | “History of the Wodeyars of Mysore” |
| 8. Mohibul Hasan | - | “History of Tipu Sulthan” |
| 9. T.V Mahalingam | - | “ Administration and Social Life Under Vijayanagara” |
| 10. K.V Ramesh | - | “History of South Kenara ” |

Pedagogy

- ☐ Lecture Method – Class Room Teaching
- ☐ Visit to Archaeological sites
- ☐ Learn techniques of excavations
- ☐ Collaborative learning strategies
- ☐ Learning about digging, Trenching and Exploration
- ☐ Collection and Preservation of Artifacts

Assessment:

Weightage for assessments (in percentage)

| Formative Assessment | | |
|--|---------------------|---|
| | Internal Assessment | Theory Part Semester End Examination |
| Internal Test | 15 | 60 |
| Assignments/Seminar/Field study/Lab Practice | 15 | |
| Viva Voice | 10 | |
| Total | 40 | |
| Grand Total | | 100 |

Date:13.09.2021

Course Co-ordinator

Subject Committee Chairperson

Prof. R Rajanna

BA

Semester 2

| | |
|--|-----------------------------|
| Course Title: Cultural Heritage of Karnataka | |
| Total Contact Hours: 39 to 42 | Course Credits: 3 |
| Formative Assessment Marks: 40 | Duration of ESA/Exam: 60 |
| Model Syllabus Authors: | Summative Assessment Marks: |

Course Pre-requisite(s): Cultural Heritage of Karnataka

Course Outcomes (COs):

At the end of the course the student should be able to:

- ☐ Understand the concept of cultural heritage of Karnataka
- ☐ Study various cultural factors which influence the flow of culture
- ☐ Familiarize the factors which influenced in influencing culture and society
- ☐ Analyze the factors responsible for formation of pluralistic society
- ☐ Understand the concept “Unity in diversity”.

Course Articulation Matrix: Mapping of Course Outcomes (COs) with Program Outcomes (POs 1-12)

| Course Outcomes (COs) / Program Outcomes (POs) | DSC1 | DSC2 | DSC3 | DSC4 | DSC5 | DSC6 | OE1 | OE2 | SEC1 | SEC2 |
|--|------|------|------|------|------|------|-----|-----|------|------|
| Disciplinary Knowledge | x | x | x | x | x | x | x | x | | |
| Communication Skills | x | x | x | x | x | x | x | x | | |
| Critical Thinking | x | x | x | x | x | x | x | x | x | x |
| Problem Solving | | | x | x | x | x | x | x | x | x |
| Analytical Reasoning | x | x | x | x | x | x | x | x | | |
| Cooperation and Team Work | | x | x | x | | x | x | x | | x |
| Reflective Thinking | | x | x | x | x | x | x | x | x | x |
| Self-motivated Learning | | | x | x | x | x | x | x | x | x |
| Diversity Management and Inclusive Approach | x | x | x | x | | x | x | x | | |
| Moral and Ethical Awareness Reasoning | x | x | x | x | x | x | x | x | | x |
| Lifelong Learning | | x | | x | x | x | x | x | | x |

Course Articulation Matrix relates course outcomes of course with the corresponding program outcomes whose attainment is attempted in this course. Mark „X’ in the intersection cell if a course outcome addresses a particular program outcome.

BA
BA Semester 2

Title of the Course: Cultural Heritage of Karnataka

| Course 1 | | Course 2 | |
|--------------------------|----------------------------------|--------------------------|----------------------------------|
| Number of Theory Credits | Number of lecture hours/semester | Number of Theory Credits | Number of lecture hours/semester |
| 3 | 39 or 42 | 3 | 39 or 42 |

| Content of Course 1 | 39/42 Hrs |
|--|-----------|
| Unit – 1 Introduction | 13/14 |
| Chapter No. 1 Meaning, Definition and Concepts | 07 |
| Chapter No. 2 Characteristic features of Coastal Karnataka and Kodagu | 07 |
| Unit – 2 Fairs, Festivals and Rituals-Daivaradhane | 13/14 |
| Chapter No. 3. Significance – Festivals - Fairs | 09 |
| Chapter No. 4. Legends and Narratives- Paddanas | 05 |
| Unit – 3 Performing Arts | 13/14 |
| Chapter No.5. Folk Dances and theatre- Yakshagana | 07 |
| Chapter No. 6 Architecture and Built Heritage | 07 |

Books for Reference

- | | | |
|--------------------------|---|---|
| 1. K.T Achaya | - | Indian food Historical Companion |
| 2. Sachin Shekhar Biswas | - | Protecting the Cultural Heritage |
| 3. N.K Bose | - | Culture Zones of India in culture and Society in India. |
| 4. S. Narayan | - | Indian Classical Dances |
| 5. Prakash, H.S Shiva | - | Traditional Theatres |
| 6. Krishna N. Reddy | - | Cultural Heritage of South India |
| 7. Dr. A. Murageppa | - | Dakshin Bhartiya Jaanpad Kosh. Vol-I II |
| 8. Dr. Suryanath Kamat | - | Karnataka Sankshipt Itihas |
| 9. Shrinivas T | - | Bhartiya Itihas Mattu Parampare |
| 10. K.R. Basavaraj | - | Karnataka History and Culture |

Pedagogy

- ☐ Lecture Method – Class Room Teaching
- ☐ Visit to Archaeological sites
- ☐ Learn techniques of excavations
- ☐ Collaborative learning strategies
- ☐ Learning about digging, Trenching and Exploration
- ☐ Collection and Preservation of Artifacts

Assessment:

Weightage for assessments (in percentage)

| Formative Assessment | | |
|-----------------------|---------------------|---|
| | Internal Assessment | Theory Part Semester End Examination |
| Internal Test | 15 | 60 |
| Assignments/Map study | 10 | |
| Viva Voice | 15 | |
| Total | 40 | |
| Grand Total | | 100 |

Date:13.09.2021

Course Co-ordinator

Subject Committee Chairperson

Prof. R Rajanna

BA

Semester 2

| | |
|--|-----------------------------|
| Course Title: Cultural History of Karnataka (11 AD to 1750 AD) | |
| Total Contact Hours: 39 to 42 | Course Credits: 3 |
| Formative Assessment Marks: 40 | Duration of ESA/Exam: 60 |
| Model Syllabus Authors: | Summative Assessment Marks: |

Course Pre-requisite(s): Cultural History of Karnataka (11 AD to 1750 AD)

Course Outcomes (COs):

At the end of the course the student should be able to:

- ☐ Understand the concept of cultural heritage of Karnataka
- ☐ Study various cultural factors which influence the flow of culture
- ☐ Familiarize the factors which influenced in influencing culture and society
- ☐ Analyze the factors responsible for formation of pluralistic society
- ☐ Understand the concept “Unity in diversity”.

Course Articulation Matrix: Mapping of Course Outcomes (COs) with Program Outcomes (POs 1-12)

| Course Outcomes (COs) / Program Outcomes (POs) | DSC1 | DSC2 | DSC3 | DSC4 | DSC5 | DSC6 | OE1 | OE2 | SEC1 | SEC2 |
|--|------|------|------|------|------|------|-----|-----|------|------|
| Disciplinary Knowledge | x | x | x | x | x | x | x | x | | |
| Communication Skills | x | x | x | x | x | x | x | x | | |
| Critical Thinking | x | x | x | x | x | x | x | x | x | x |
| Problem Solving | | | x | x | x | x | x | x | x | x |
| Analytical Reasoning | x | x | x | x | x | x | x | x | | |
| Cooperation and Team Work | | x | x | x | | x | x | x | | x |
| Reflective Thinking | | x | x | x | x | x | x | x | x | x |
| Self-motivated Learning | | | x | x | x | x | x | x | x | x |
| Diversity Management and Inclusive Approach | x | x | x | x | | x | x | x | | |
| Moral and Ethical Awareness Reasoning | x | x | x | x | x | x | x | x | | x |
| Lifelong Learning | | x | | x | x | x | x | x | | x |

Course Articulation Matrix relates course outcomes of course with the corresponding program outcomes whose attainment is attempted in this course. Mark „X in the intersection cell if a course outcome addresses a particular program outcome.

BA
BA Semester 2

Title of the Course: Cultural History of Karnataka (11 AD to 1750 AD)

| Course 1 | | Course 2 | |
|---------------------------------|---|---------------------------------|---|
| Number of Theory Credits | Number of lecture hours/semester | Number of Theory Credits | Number of lecture hours/semester |
| 3 | 39 or 42 | 3 | 39 or 42 |

| Content of Course 1 | 39/42 Hrs |
|---|------------------|
| Unit – 1 Introduction | 13/14 |
| Chapter No. 1 Administration – Central and Provincial | 05 |
| Chapter No. 2 Kingship – Duties of King – Governors - Warfare | 04 |
| Chapter No. 3 Local Self Government – Village Administration | 05 |
| Unit – 2 Society and Economy | 13/14 |
| Chapter No. 4. Social Conditions – Society – Rituals and Customs | 05 |
| Chapter No. 5. Economic Conditions – Agriculture | 04 |
| Chapter No. 6. Trade and Commerce | 05 |
| Unit – 3 Religion and Art | 13/14 |
| Chapter No. 7 Bhakti Saints -Teaching and Philosophy – Sufism | 05 |
| Chapter No. 8. Temple Architecture – Islamic Architecture | 04 |
| Chapter No. 9 Painting | 05 |

Books for Reference

- | | | |
|-----------------------------|---|---------------------------------------|
| 1. P.B Desai | - | History of Karnataka |
| 2. K.R Basavaraja | - | History and Culture of Karnataka |
| 3. B.R Hiremath | - | Karnataka Shasanagalalli Vartakaru |
| 4. Rahamat Tarikere | - | Karnataka Sufigalu |
| 5. Rajaram Hegde & M.V Vasu | - | Dakshina Karnataka Arasu Manethangalu |
| 6. R.R Diwakar | - | Karnatka Through the Ages |
| 7. Suryanath U. Kamath | - | A History of Karnataka |
| 8. H.K Sherwani | - | The Bahamani's of the Deccan |
| 9. Dept. of Archaeology | - | Vijayanagar Adhayayana |
| 10. Baragur Ramachandrappa | - | Karnataka Sangathi |

Pedagogy

- ☐ Lecture Method – Class Room Teaching
- ☐ Visit to historical sites
- ☐ Group Discussion
- ☐ Visit to cultural sites
- ☐ Preparation of charts

Assessment:

Weightage for assessments (in percentage)

| Formative Assessment | | |
|-----------------------|---------------------|---|
| | Internal Assessment | Theory Part Semester End Examination |
| Internal Test | 15 | 60 |
| Assignments/Map study | 10 | |
| Viva Voice | 15 | |
| Total | 40 | |
| Grand Total | | 100 |

Date:13.09.2021

Course Co-ordinator

Subject Committee Chairperson

Dr. R Rajanna

BA

Semester 2

| | |
|--------------------------------|-----------------------------|
| Course Title: Manuscriptology | |
| Total Contact Hours: 39 to 42 | Course Credits: 3 |
| Formative Assessment Marks: 40 | Duration of ESA/Exam: 60 |
| Model Syllabus Authors: | Summative Assessment Marks: |

Course Pre-requisite(s): Manuscriptology

Course Outcomes (COs):

At the end of the course the student should be able to:

- ☐ Understand the importance of manuscripts
- ☐ Study manuscripts as an ancillary for study of history
- ☐ Understand the concept of cataloguing of manuscripts
- ☐ Practice the science of conservation and preservation of manuscripts
- ☐ Visit libraries and Archives to study conservation and preservation

Course Articulation Matrix: Mapping of Course Outcomes (COs) with Program Outcomes (POs 1-12)

| Course Outcomes (COs) / Program Outcomes (POs) | DSC1 | DSC2 | DSC3 | DSC4 | DSC5 | DSC6 | OE1 | OE2 | SEC1 | SEC2 |
|--|------|------|------|------|------|------|-----|-----|------|------|
| Disciplinary Knowledge | x | x | x | x | x | x | x | x | | |
| Communication Skills | x | x | x | x | x | x | x | x | | |
| Critical Thinking | x | x | x | x | x | x | x | x | x | x |
| Problem Solving | | | x | x | x | x | x | x | x | x |
| Analytical Reasoning | x | x | x | x | x | x | x | x | | |
| Cooperation and Team Work | | x | x | x | | x | x | x | | x |
| Reflective Thinking | | x | x | x | x | x | x | x | x | x |
| Self-motivated Learning | | | x | x | x | x | x | x | x | x |
| Diversity Management and Inclusive Approach | x | x | x | x | | x | x | x | | |
| Moral and Ethical Awareness Reasoning | x | x | x | x | x | x | x | x | | x |
| Lifelong Learning | | x | | x | x | x | x | x | | x |

Course Articulation Matrix relates course outcomes of course with the corresponding program outcomes whose attainment is attempted in this course. Mark „X’ in the intersection cell if a course outcome addresses a particular program outcome.

BA
BA Semester 2

Title of the Course: Manuscriptology

| Course 1 | | Course 2 | |
|--------------------------|----------------------------------|--------------------------|----------------------------------|
| Number of Theory Credits | Number of lecture hours/semester | Number of Theory Credits | Number of lecture hours/semester |
| 3 | 39 or 42 | 3 | 39 or 42 |

| Content of Course 1 | 39/42 Hrs |
|--|-----------|
| Unit – 1 Introduction | 13/14 |
| Chapter No. 1 Meaning – Definition – Character | 04 |
| Chapter No. 2 Scope and importance | 05 |
| Chapter No. 3 Types of Manuscripts - Methods of Study | 04 |
| Unit – 2 Collection | 13/14 |
| Chapter No. 4. History of Manuscriptology | 05 |
| Chapter No. 5. Indian Manuscriptology | 04 |
| Chapter No. 6. Manuscripts in Kannada, Tigalari, Samskrit, Pali, Tamil/Grantha,Tulu, Nandinagari and Modi | 05 |
| Unit – 3 Editing | 13/14 |
| Chapter No. 7 Collection of Manuscripts | 03 |
| Chapter No. 8. Process of Editing | 05 |
| Chapter No. 9 Preservation of Manuscripts | 06 |

Books for Reference

- | | | |
|---|---|--|
| 1. Chinthahar Chakravathi | - | Study of Manuscriptology |
| 2. M.V Seetharamiah & M. Chidanada murthy | - | Hastiprati Sastra |
| 3. N. Geethacharya | - | Hastiprati Sastra Adhyayana |
| 4. Sitharam Jahagirdar | - | Kannada Grantha Sampadhana Sastra Parichaya |
| 5. S. Jagannath | - | Grantha Sampadana Shastra |
| 6. Devarakondareddy | - | Lipiya Huttu mattu Belavanige |
| 7. Madhava Na Katti | - | Lipishastra Pravesha |
| 8. B.S Sanaya | - | Kannada Hasta Prathigala Micro film Soochi |
| 9. T.V Venkatalachala Sastri | - | Halaya Honnu |
| 10. A.K Sasthri | - | Sringeri Kadathagalu |

Pedagogy

- Class room teaching
- Visit to repositories, Archives and institutions.
- Learn in repositories the techniques of preservation
- Learn conservative method
- Study and classify manuscripts in different languages

Assessment:

Weightage for assessments (in percentage)

| Formative Assessment | | |
|--|---------------------|---|
| | Internal Assessment | Theory Part Semester End Examination |
| Internal Test | 15 | 60 |
| Assignments/ Field study /Seminar /Lab practice | 15 | |
| Viva Voice | 10 | |
| Total | 40 | |
| Grand Total | | 100 |

Date:13.09.2021

Course Co-ordinator

Subject Committee Chairperson

Prof. R Rajanna

Course Matrix for B.A. (History-Hons): 5 Years (10 Semesters)
for Academic Year 2021-22
[As per NEP-2020 Guidelines]

FIRST SEMESTER

| Pape rNo. | Course | Title of the Course | Instructio nHours per week | Exam Duratio n | Marks | | | Credits |
|----------------------|--------|---|----------------------------------|----------------------|-------|-----|-------|----------|
| | | | | | IA | ETE | Total | |
| 1.1 | DSC-1 | Political history of Karnataka (BCE-3 to 10 CE) Part-1 | 4 | 3 | 40 | 60 | 100 | 3 |
| 1.2 | DSC-2 | Cultural Heritage of India | 4 | 3 | 40 | 60 | 100 | 3 |
| 1.3 | OE-1 | Cultural History of Karnataka (CE 3- CE 10) Part-I OR Introduction to Archaeology | 4 | 3 | 40 | 60 | 100 | 3 |
| Total Credits | | | | | | | | 9 |

SECOND SEMESTER

| Paper No. | Course | Title of the Course | Instruction Hours per week | Exam Duration | Marks | | | Credits |
|----------------------|--------|---|----------------------------|---------------|-------|-----|-------|----------|
| | | | | | IA | ETE | Total | |
| 2.1 | DSC-3 | Political History of Karnataka (CE11-1799 AD) | 4 | 3 | 40 | 60 | 100 | 3 |
| 2.2 | DSC -4 | Cultural Heritage of Karnataka | 4 | 3 | 40 | 60 | 100 | 3 |
| 2.3 | OE-2 | Cultural History of Karnataka (11 AD to 1750 AD) OR Manuscriptology | 4 | 3 | 40 | 60 | 100 | 3 |
| Total Credits | | | | | | | | 9 |

BA**Semester 3****DSC-5**

| | |
|--|-------------------------------------|
| Course Title: Political History of India (From Indus Culture upto 1206) | |
| Total contact Hours: 39-42 | Course Credits: 3 |
| Formative Assessment Marks: 40 | Duration of ESA/Exam: 2hours |
| Model Syllabus Authors: | Summative Assessment Marks:60 |

Course Pre-requisites(s): History and Culture of Political History of India

Course Outcomes (Cos):

At the end of the course the students should be able to:

(Write 3-7 course outcomes. Course outcomes are statements of observable student's actions that serve as evidence of knowledge, skills and values acquired in this course)

- Understand the history and culture of Political History of India region.
- Analyse the importance of causes for backwardness of this region.
- Understand the influence of political influence on the people and culture of this region.
- Understand the political, Social, Religious and Cultural history of the region.
- Appreciate the divergent cultural and communal harmony of this region.

Course Articulation Matrix: Mapping of Course Outcomes (OCs) with Program Outcomes (Pos 1-12).

| Course Outcomes (Cos)/Program Outcomes (Pos) | DSC 1 | DSC 2 | DSC 3 | DSC 4 | DSC 5 | DSC 6 | OE 1 | OE 2 | SEC 1 | SEC 2 |
|--|--------------|--------------|--------------|--------------|--------------|--------------|-------------|-------------|--------------|--------------|
| Disciplinary knowledge | X | X | X | X | X | X | X | X | | |
| Communication Skills | X | X | X | X | X | X | X | X | X | X |
| Critical Thinking | X | X | X | X | X | X | X | X | X | X |
| Problem Solving | X | X | X | X | X | X | X | X | X | X |
| Analytical Reasoning | X | X | X | X | X | X | X | X | | |
| Cooperation and Team Work | X | X | X | X | X | | | | | |

| | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| Reflective Thinking | X | X | X | X | X | X | X | X | X | X |
| Self-Motivated Learning | X | X | X | X | X | X | X | X | X | X |
| Diversity Management and Inclusive Approach | X | X | X | X | X | X | X | X | X | X |
| Moral and Ethical Awareness Reasoning | X | X | X | X | X | X | X | X | X | X |
| Lifelong Learning | X | X | X | X | X | X | X | X | X | X |

Course Articulation Matrix relates course outcomes of course with the corresponding program outcomes whose attainment is attempted in this course. Mark **“X”** the intersection cell if a course outcomes addresses a particular program outcome.

BA
Semester 3

DSC-5

POLITICAL HISTORY OF INDIA (From Indus Culture upto 1206)

The main objective of this syllabus is to provide a broad historic outline about the process of socio-political formations in the north and south India up to 1206 CE. Four modules introduce four main process of the Socio - Political formations; the emergence of the first urbanization in the north western part of early India during bronze age, the Socio - Political formations of Indo Gangetic plains in the Iron Age, the emergence of an empire under Mauryas in the north the chola – chera policy in the South and the formation of feudal cultures in the north and south.

| UNIT -1 Towards Civilization -Harappan and Vedic Civilization | |
|---|----------|
| Chapter-I | 6 |
| Pre-Harappan cultures; - extension of the Harappan culture- features of the Harappan sites; Harappa, Mohenjodaro, Lothal, Dholavira, Kalibangan | |
| Chapter-II | 6 |
| Debate on the decline of Indus civilization, Debate on Harappan script: AiravathamMahadevan – AskoParpola | |
| Chapter-III | 6 |
| Vedic literatures and Archaeological evidences - PGW, NBPW- early tribal pastoral and agrarian society in the Gangetic Plains, Early and later Vedic polity | |
| UNIT -2 : Socio-Political Formations in the Indo - Gangetic Plains Nature of state | |
| Chapter-IV | 6 |
| Formation of urban centers- Mahajanapadas,- Oligarchies, Monarchies and republics | |
| Chapter-V | 6 |
| Material setting of the formation of Jainism and Buddhism ,From Mahajanapadas to the empire- domination of Magadha- foundation of Mauryan polity, | |
| Chapter-VI | 5 |
| Asokan Edicts and Megasthenees'sIndica, Arthasasthra and early Indian treatise on the theory of state; Sapthanga – nature of Asoka's dhamma | |
| UNIT -3 : | |
| Chapter-VII | 5 |
| Chera, Chola and Pandya polity- Chalukyan polity -Guptha polity. | |
| Chapter -VIII | 6 |
| Debates on Indian feudalism; R.S Sharma, HerbansMukhiaSouth Indian feudalism | |
| Chapter -IX | 5 |
| Arab conquest of Sind- the Sultanate ascendancy in India. | |

Essential Readings:

D.N Jha. Ancient India an Introductory Outline
ShareenRatnagar. Understanding Harappa
M.K Bhavalikar. Cultural Imperialism
R.S. Sharma. India's Ancient Pasts
Upinder Singh. A History of Ancient and Early Medieval India
R.S. Sharma. Material Culture and Social formations in Ancient India
.....India's Ancient Past
RomilaThappar. From Lineage to State
.....Early India
Upinder Singh. A History of Ancient and Early Medieval India

Pedagogy:

Knowledge: The student should acquire knowledge of terms, concepts, political events, ideas, conventions, problems, trends, personalities, chronology and generalizations etc. related to the study of Political History Of India Region. The student should be able to recall, recognize, show and read the history of the region.

Understanding: The student should develop understanding of terms, facts, important events, trends, etc. related to the history and Culture of Political History Of India Region. The student is able to classify facts, illustrate events, compare and contrast events, explain events, discriminate, identify, arrange facts, detect the errors, interpret and extract.

Critical Thinking: The subject leads to develop the interest in the study of History and Culture of Political History Of India region. It also creates a critical thinking ability among the students. The student will be able to identify, analyse, collect, select, draw and verify the historical facts.

Practical Skills: The subject enables the students to develop practical skills which help in the study and understanding of historical facts. The student should be able to draw maps, charts, diagrams and prepare models, etc.

Learning Outcomes: This course enables students to explore various aspects of political, Culture and Heritage and also the cultural diversity of Political History Of India region in historical perspective that discusses numerous cultural practices that have evolved over centuries. The students will gather knowledge about the cultural heritage, cultural forms and cultural expressions performing arts, fairs and festivals.

Assessment: Weight age for assessment (in percentage)**Outlines for continuous assessment activities for C1 and C2**

| Formative Assessment | | | |
|---------------------------------------|-----------|-----------|--------------------|
| Activities | C1 | C2 | Total Marks |
| Session Test | 10 Marks | 10 | 20 |
| Sessions/Presentations/Activities | 10 Marks | | 10 |
| Case Study/Assignment/Field Work Etc. | | 10 | 10 |
| Total | | | 40 |

BA
Semester 3
DSC-6

| | |
|--|-------------------------------|
| Course Title: History of Coastal Karnataka and Kodagu (Compulsory paper) | |
| Total contact Hours: 39-42 | Course Credits: 3 |
| Formative Assessment Marks: 40 | Duration of ESA/Exam:2 Hours |
| Model Syllabus Authors: | Summative Assessment Marks:60 |

Course Pre-requisites(s): History of Coastal Karnataka and Kodagu

Course Outcomes (Cos):

At the end of the course the students should be able to:

(Write 3-7 course outcomes. Course outcomes are statements of observable student's actions that serve as evidence of knowledge, skills and values acquired in this course)

Understand the history History of Coastal Karnataka and Kodagu

- Analyse the important Political changes of this region.
- Understand the influence of political influence on the people and culture of this region.
- Appreciate the divergent Political changes of this region

- Course Articulation Matrix: Mapping of Course Outcomes (OCs) with Program Outcomes (Pos 1-12).

[illegible]

| | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| Self-Motivated Learning | X | X | X | X | X | X | X | X | X | X |
| Diversity Management and Inclusive Approach | X | X | X | X | X | X | X | X | X | X |
| Moral and Ethical Awareness Reasoning | X | X | X | X | X | X | X | X | X | X |
| Lifelong Learning | X | X | X | X | X | X | X | X | X | X |

Course Articulation Matrix relates course outcomes of course with the corresponding program outcomes whose attainment is attempted in this course. Mark “**X**” the intersection cell if a course outcomes addresses a particular program outcome.

BA

Semester 3

DSC-6

History of Coastal Karnataka and Kodagu (Compulsory paper)

| Content of Course 1 | 42 Hours |
|--|-------------|
| UNIT -1 Introducing History of Coastal Karnataka and Kodagu | |
| Chapter-I Historical Geography | 5 |
| Geographical Features of Coastal Karnataka and Kodagu - Sources: | |
| Chapter-II Pre -History | 7 |
| Palaeolithic Culture – Mesolithic Culture –Neolithic Culture Megalithic Culture – Types of Megalithic Burials – Grave goods – Formation of Villages and Social life – Beliefs and Customs – Iron and tank irrigation. Rock Art – Avalakki Pare – Buddhanajeddu – Gavali sites. | |
| Unit II Historical Period | |

| | |
|---|----|
| Chapter III | 5 |
| Maurya – Shatavahana – Kadamba's. Early Alupa's – Aluvarasa I – Chitravahana I – Aluvarasa II – Civil war | |
| Chapter IV | 5 |
| Medieval Alupa's – Kundavarma – Jayasimha – Kulasekhara I – Kundana – Ballamahadevi. Hoysala invasions on Coastal Karnataka and Kodagu | |
| Unit III Vijayanagar Period | |
| Chapter V | 10 |
| Rise of Vijayanagar Empire Chikkayi Tayi and Rise of Sangama Dynasty – Governor's – Banga Chiefs. Saluva's and Tuluva's – Governor's and Bhairara's of Kalasa and Karkala – Haduvalli – Gerusoppe Chiefs – Honneya Kambali's Araveedu Dynasty – Nayakas of Keladi | |
| Unit – IV Rise of Hyder and Tippu- Haaleri Dynasty | |
| Chapter-VI | 5 |
| Anglo-Mysore war's – Fall of Tippu | |
| Chapter-VII | 5 |
| Haaleri Dynasty – Chikaveera Rajendra – Rajendra Name | |

BOOKS SUGGESTED:

1. K. V. Ramesh, A History of South Kanara, 1975
2. K. V. Ramesh , Tulunadina Itihasa, 1968
3. K. V. Ramesh, and M. J. Sharma , Tulunadina Arasumanethanagalau mattu Dharma Samanvaya, 1985
4. K. V. Ramesh, and M. J. Sharma, Tulunadina Sasanagalu.
5. B.A. Saletore, Ancient Karantaka, Vol. I: History of Tuluva, 1936
6. B.A. Saletore, Karnataka's Tans-Oceanic Contacts, 1956
7. M. Ganapathi Rao, Aigal, Dakshina Kannada Jilleya Prachina Itihasa.
8. Gaovinda Pai, Samagra Barahagalu

9. Gururaja Bhat, P, Studies in Tuluva History and Culture, 1975.
10. Gururaja Bhat, P -, Antiquities of South Kanara, 1969.
11. Gururaja Bhat, P, Tulunadu, 1963.
12. Kushalappa Gowda and Chinnappa Gowda K, Dakshina Kannada Jilleya Kaifiyattugalu, 1983.
13. Vasantha Madhava K.C., Religions in Coastal Karnataka, 1985.
14. Vasantha Madhava K.C , Western Karnataka: its Agrarian Relations (1500- 1800 A.D), 1991.
15. J. Sturrock, U., Madras District Manuals of South Canara Vol. 1., 1894.
16. H. A. Stuart, Madras District Manuals of South Canara Vol. 2., 1895
17. C. N. Ramachandran, et. al, (ed.) Perspectives on Dakshina Kannada and Kodagu, 1991.
18. Thurston, Castes and Tribes of Southern India, Vol V, 1909.
19. The Early Coorgs: A History of Early Kodagu and Its People: [Mookonda Kushalappa](#)
20. **Mysore and Coorg a Gazetteer by Benjamin Lewis Rice:** [Benjamin Lewis Rice](#)
21. Kodagina Itihasa D N Krishnayya
22. Kodagina Haleri Raajavamsha M G Nagaraj

Pedagogy:

Knowledge: The student should acquire knowledge of terms, concepts, political events, ideas, conventions, problems, trends, personalities, chronology and generalizations etc. related to the study of History of Coastal Karnataka and Kodagu. The student should be able to recall, recognize, show and read the history of the region.

Understanding: The student should develop understanding of terms, facts, important events, trends, etc. related to the history and Culture of History of Coastal Karnataka and Kodagu. The student is able to classify facts, illustrate events, compare and contrast events, explain events, discriminate, identify, arrange facts, detect the errors, interpret and extract.

Critical Thinking: The subject leads to develop the interest in the study of History of Coastal Karnataka and Kodagu

It also creates a critical thinking ability among the students. The student will be able to identify, analyse, collect, select, draw and verify the historical facts.

Practical Skills: The subject enables the students to develop practical skills which help in the study and understanding of historical facts. The student should be able to draw maps, charts, diagrams and prepare models, etc.

Learning Outcomes: This course enables students to explore various aspects of pre-history, political, Culture and Heritage and also the cultural diversity of History of Coastal Karnataka and Kodagu in historical perspective that discusses numerous cultural practices that have evolved over centuries. The students will gather knowledge about the political forms.

Assessment: Weight age for assessment (in percentage)

Outlines for continuous assessment activities for C1 and C2

| Formative Assessment | | | |
|---------------------------------------|-----------|-----------|--------------------|
| Activities | C1 | C2 | Total Marks |
| Session Test | 10 Marks | 10 | 20 |
| Sessions/Presentations/Activities | 10 Marks | | 10 |
| Case Study/Assignment/Field Work Etc. | | 10 | 10 |
| Total | | | 40 |

| | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| Cooperation and Team Work | X | X | X | X | X | | | | | |
| Reflective Thinking | X | X | X | X | X | X | X | X | X | X |
| Self-Motivated Learning | X | X | X | X | X | X | X | X | X | X |
| Diversity Management and Inclusive Approach | X | X | X | X | X | X | X | X | X | X |
| Moral and Ethical Awareness Reasoning | X | X | X | X | X | X | X | X | X | X |
| Lifelong Learning | X | X | X | X | X | X | X | X | X | X |

Course Articulation Matrix relates course outcomes of course with the corresponding program outcomes whose attainment is attempted in this course. Mark **“X”** the intersection cell if a course outcomes addresses a particular program outcome.

Introduction to Epigraphy
Paper -3.3
Open Elective -3
Course Category: Elective course 2

No. of Credits: 3

No. of Contact Hours: 3 Hours per week

This paper aims to provide a broad outline about the nature of epigraphical studies in India and also familiarize the ancient scripts. Students could differentiate the inscriptions based on script and language. Use inscriptions as source material for reconstruction of History and historical Understanding. Read the inscriptions and manuscripts and compares it with present style of writing

| CONTENT OF COURSE | 42 HOURS |
|---|-----------------|
| UNIT-I Introduction to Epigraphy | |
| CHAPTER-1 <ul style="list-style-type: none"> ❖ Evolution of Indian Epigraphy and methods of epigraphy, ❖ Definitions- Key concepts; epigraphy, paleography. | 06 |
| CHAPTER-2 <ul style="list-style-type: none"> ❖ James Prinsep and the decipherment of Brahmi inscriptions ❖ Attempts to decipher the Indus script Methods; eye copy, estampage and photography | 06 |
| CHAPTER-3 <ul style="list-style-type: none"> ❖ Presentation of Text- ❖ Dating- Eras; Kali era, Saka era, Vikrama era. ❖ Collections of inscriptions during Colonial Period; EpigraphiaIndica, ❖ South Indian Inscriptions, | 06 |
| UNIT-II Epigraphic carnatica. | |
| CHAPTER-4 Scripts; Brahmi ,Kharoshti, Vattezhuttu, , Grantha <ul style="list-style-type: none"> ❖ Medium of inscriptions ❖ palm leaves, ❖ copper plates, ❖ silver plates, ❖ walls of caves | 05 |
| CHAPTER-5 <ul style="list-style-type: none"> ❖ Nature of inscriptions; Memorials, Labels, land grants, phashasthi. | 03 |
| CHAPTER-6 Historicizing Some Important Inscriptions Asokan inscriptions in Karnataka <ul style="list-style-type: none"> ❖ Halmidi inscriptions ❖ Uttaramerur inscription ❖ Aihole ❖ Inscriptions of vijayanagara period | 04 |
| UNIT-III | |
| CHAPTER-7 North Indian Epigraphy/Inscriptions. <ul style="list-style-type: none"> ❖ Hatigumpha Inscription of Kharavela. ❖ Samudragupta's Allahabad Pillar Inscription. | 04 |
| CHAPTER-8 South Indian Epigraphy/Inscriptions. <ul style="list-style-type: none"> ❖ Talagunda Inscription ❖ Nasik Inscription | 04 |
| CHAPTER-9 PracticalsIn Kannada Palaeography. <ul style="list-style-type: none"> ❖ Practical Training in taking estampages of stone and copper plate inscriptions by visiting the historical places. | 04 |

REFERENCE BOOK

1. Buhler, G., Indian Palaeography, Indological Book House, N.Delhi, 1968
2. Pandey, R.B., Indian Palaeography, Motilal Banarsidas, Benaras, 1952
3. Dani, A.H., Indian Palaeography
4. Mahalingam, T.V., Early South Indian Palaeography, University of Madras, 1967
5. Sivaramamurthy, Indian Epigraphy and South Indian Scripts
6. Burnell, A.C., Elements of South Indian Palaeography
7. Mahalingam, T.V., Early South Indian Palaeography
8. Rajan, K., Kalvettiyal (Tamil), Mano Pathippagam, Thanjavur
9. Natana. Kasinathan, Kalleluttukalai, (Tamil)
10. Subramanian, T.N., South Indian Temple Inscriptions.

Pedagogy:

Knowledge: the student should acquire knowledge of terms, concepts, political events, ideas, conventions, problems, trends, personalities, chronology and generalizations etc. related to the study of Introduction to Epigraphy. The student should be able to recall, recognize, show and read the history of the medieval times.

Understanding: The student should develop understanding of terms, facts, important events, trends, etc., related to Introduction to Epigraphy. The student is able to classify facts, illustrate events, compare and contrast events, explain events, discriminate, identify, arrange facts, detect the errors, interpret and extract.

Critical Thinking: The subject leads to develop the interest in the study of Introduction to Epigraphy. It also creates a critical thinking ability among the students. The student will be able to identify, analyse, collect, select, draw and verify the historical facts and figures.

Practical Skills: The subject enables the students to develop practical skills which help in the study and understanding of historical facts. The student should be able to draw maps, charts, diagrams and prepare models, etc.

Learning Outcomes: This course enables students to explore various aspects of political, diplomatic relations of the rulers of medieval times in historical perspective that discusses numerous political practices that have evolved over centuries. The students will gather knowledge about the various dynasties, political diplomacy, results and impact wars and battles the people. It also helps the students to develop the knowledge and awareness about the political ideologies.

Assessment:**Weight age for assessment (in percentage)****Outlines for continuous assessment activities for C1 and C2**

| Formative Assessment | | | |
|---------------------------------------|-----------|-----------|--------------------|
| Activities | C1 | C2 | Total Marks |
| Session Test | 10 Marks | 10 | 20 |
| Sessions/Presentations/Activities | 10 Marks | | 10 |
| Case Study/Assignment/Field Work Etc. | | 10 | 10 |
| Total | | | 40 |

O.E III Semester

| | |
|---|---------------------------------|
| Title of the Course: Freedom Movement in Karnataka (1800-1947) | |
| Total contact Hours: 39-42 | Course Credits: 3 |
| Formative Assessment Marks: 40 | Duration of ESA/Exam: 60 |
| Model Syllabus Authors: | Summative Assessment Marks: |

Course Pre-requisites(s): Freedom Movement in Karnataka (1800-1947)

Course Outcomes (Cos):

At the end of the course the students should be able to:

(Write 3-7 course outcomes. Course outcomes are statements of observable student's actions that serve as evidence of knowledge, skills and values acquired in this course)

- Understand the Freedom Movement in Karnataka (1800-1947)
- Analyse the importance of causes for backwardness of this region.

Understand the influence of Freedom Movement in Karnataka (1800-1947)

- Understand the political, Social, Religious and Cultural history of the region.
- Appreciate the divergent cultural and communal harmony of this region.

Course Articulation Matrix: Mapping of Course Outcomes (OCs) with Program Outcomes (Pos 1-12).

[illegible]

| | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| Cooperation and Team Work | X | X | X | X | X | | | | | |
| Reflective Thinking | X | X | X | X | X | X | X | X | X | X |
| Self-Motivated Learning | X | X | X | X | X | X | X | X | X | X |
| Diversity Management and Inclusive Approach | X | X | X | X | X | X | X | X | X | X |
| Moral and Ethical Awareness Reasoning | X | X | X | X | X | X | X | X | X | X |
| Lifelong Learning | X | X | X | X | X | X | X | X | X | X |

Course Articulation Matrix relates course outcomes of course with the corresponding program outcomes whose attainment is attempted in this course. Mark **“X”** the intersection cell if a course outcomes addresses a particular program outcome.

BA**O.E III Semester****O.E-3: Freedom Movement in Karnataka (1800-1947)**

| Course 1 | | Course 2 | |
|--------------------------|----------------------------------|--------------------------|----------------------------------|
| Number of Theory Credits | Number of lecture hours/semester | Number of Theory Credits | Number of lecture hours/semester |
| 3 | 39 or 42 | 3 | 39 or 42 |

| Content of Course 1 | 39/42 Hrs |
|---|-----------|
| Unit – 1 Early Uprisings in Karnataka | 12/13 |
| Chapter No.1 Dhondya Wagh, Venkatadri Nayaka, Koppala Veerappa, Deshmuks of Bidar, Shivalingaiah, Sindagi Revolt. | 05 |
| Chapter No.2 Rani Chennamma-Sangolli Rayanna-Nagar Revolt-Kodagu Revolt | 04 |
| Chapter No.3 1857 and After-Bedas of Halagali-Naragunda Babasaheb Revolt-Surapura Venkatappa Nayaka-Mundaragi Bheema Rao | 04 |
| Unit – 2 Nationalism in Karnataka | 13/14 |
| Chapter No.4 Nationalism-Causes for the Rise of Nationalism-Impact of Tilak-Chatrusutras-Gandhi in Karnataka-Belguam Congress 1924 | 05 |
| Chapter No.5 Khadi Movement-Koujalagi Hanumantha Rao-Hallikeri Gudleppa-Tagaduru Ramachandra Rao | 05 |
| Chapter No.6 Harijana Movement -Harijana Sevaka Sangha-Sardhar Veeranna Gowda Patil-Nagamma Patil-Siddamati Mylar | 04 |
| Unit – 3 Gandhi Movements in Karnataka | 14/15 |
| Chapter No.7 Non-Cooperation Movement-Salt Sathyagraha-Ankola-No Tax Campaign in Uttar Karnataka-Forest Sathyagraha. | 05 |
| Chapter No.8 Genesis of Mysore Congress-Shivapura Dhawaja Sathyagraha-Vidurashwatha Tragedy-Patel Mirza Pact-Quit India Movement-Isooru Tragedy. | 05 |
| Chapter No.9 Establishment of Responsible Government in Princely Mysore-Mysore Chalo Sathyagraha-First Congress Ministry-A Brief Profile of Karnataka Freedom Fighter. | 05 |

AUTHORS – BOOKS

- ### Pedagogy:

Understanding: The student should develop understanding of terms, facts, important events, trends, etc., related to History of Freedom Movement in Karnataka (1800-1947). The student is able to classify facts, illustrate events, compare and contrast events, explain events, discriminate, identify, arrange facts, detect the errors, interpret and extract.

Practical Skills: The subject enables the students to develop practical skills which help in the study and understanding of historical facts. The student should be able to draw maps, charts, diagrams and prepare models, etc.

Learning Outcomes: This course enables students to explore various aspects of political, diplomatic relations of the rulers of medieval times in historical perspective that discusses numerous political practices that have evolved over centuries. The students will gather knowledge about the various dynasties, political diplomacy, results and impact wars and battles the people. It also helps the students to develop the knowledge and awareness about the political ideologies.

Assessment:**Weight age for assessment (in percentage)****Outlines for continuous assessment activities for C1 and C2**

| Formative Assessment | | | |
|---------------------------------------|-----------|-----------|--------------------|
| Activities | C1 | C2 | Total Marks |
| Session Test | 10 Marks | 10 | 20 |
| Sessions/Presentations/Activities | 10 Marks | | 10 |
| Case Study/Assignment/Field Work Etc. | | 10 | 10 |
| Total | | | 40 |

[illegible]

| | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| Cooperation and Team Work | X | X | X | X | X | | | | | |
| Reflective Thinking | X | X | X | X | X | X | X | X | X | X |
| Self-Motivated Learning | X | X | X | X | X | X | X | X | X | X |
| Diversity Management and Inclusive Approach | X | X | X | X | X | X | X | X | X | X |
| Moral and Ethical Awareness Reasoning | X | X | X | X | X | X | X | X | X | X |
| Lifelong Learning | X | X | X | X | X | X | X | X | X | X |

Course Articulation Matrix relates course outcomes of course with the corresponding program outcomes whose attainment is attempted in this course. Mark **“X”** the intersection cell if a course outcomes addresses a particular program outcome.

BA**Semester 4**Title of the Course: **History of Medieval India**

| Course 1 (DSC-7) | | Course 2 | |
|--------------------------|----------------------------------|--------------------------|----------------------------------|
| Number of Theory Credits | Number of Lecture hours/Semester | Number of Theory Credits | Number of Lecture hours/Semester |
| 3 | 39 or 42 | 3 | 39 or 42 |

| Content of Course 1 | | 39/42 Hours |
|--|--|--------------------|
| Unit -1 Interpreting Medieval Indian History | | 14 |
| Chapter No. 1 | Interpreting Medieval Indian History | 2 |
| Chapter No. 2 | Debate on Indian Feudal System | 6 |
| Chapter No. 3 | Interpretation of Peasant State and Society of Medieval India – North India & South India – Agrarian System of Mughal and Vijayanagara Period. Bhakti Movement – Kabir, Nanak, Meera Bai, Sri Chaithanya – Alvars, Nainars. | 6 |
| Unit -2 Political Structure of Medieval Northern India and Southern India | | 14 |
| Chapter No. 4 | Comparative study of Vijayanagara Polity, Delhi Sultanate and Mughals – process of Urbanization in Mughals and Vijayanagara period | 6 |
| Chapter No. 5 | Nature of state in Vijayanagara Kingdom, Delhi Sultanate and Mughal dynasties | 6 |
| Chapter No. 6 | Military Technology of Mughals and Vijayanagara dynasties – Development of Science & Technology in Medieval India | 4 |
| Unit -3 Minor Kingdoms of North India | | 14 |
| Chapter No. 7 | Rajaputs, Gurjara Pratiharas, Palas, Paramaras | 6 |
| Chapter No. 8 | Vijayanagara dynasy – Amaranayaka System – Creation of Wealth. | 6 |
| Chapter No. 9 | The rise of the Marathas – Shivaji and his administration – Astha Pradhana System Map Extent of Vijayanagara Empire under Krishnadevaraya, Extent of Mughal Empire under Akbar, Important trade Centers of Medieval India : 1. Agra 2. Fatehpur Sikri 3. Delhi 4. Mewar 5. Hampi 6. Honnavara 7. Bhatkal 8. Raighad 9. Tirupati 10. Anegondi | 4 |

Books for Reference:

- | | |
|--|---|
| 1. Anil Chandra Banarjee | History of India |
| 2. S.C.Rayachoudhary | History of Medieval India (From 1000-1707 C.E.) |
| 3. Sarkar, Jadunath | Shivaji and his Times |
| 4. Sharma S.R. | Mughal Administration |
| 5. Tripathi R.P. | Rise and Fall of Mughal Empire |
| 6. Wolseley Haig and Richard Burn | Cambridge History of India Vo. IV |
| 7. Khosala, R.P. | Mughal Kingship and Nobility |
| 8. Srivastav A.L. | Mughal Empire |
| 9. A.C.Banarjee | New History of Medieval India |
| 10. Satish Chandra | History of Medieval India |
| 11. Banerjee A.C. | The State and Society in Northern India (1206 -1526 C.E.) |
| 12. Kulkarni A.R. | Maharashtra in the Age of Shivaji |
| 13. R.C.Majumdar (Ed.) | The Delhi Sultanate |
| 14. R.C.Majumdar (Ed.) | The Mughal Empire |
| 15. ¥É£¤.Dgi.gÁdt ¢ÄÄvÄÄÜ qÁ.J.1.£ÁUÉÄ±i | ¢ÄÄzsÁPÁ°Ä£ "sÁgÄvÄzÄ EwÁÄÄ |

Pedagogy:

Knowledge: the student should acquire knowledge of terms, concepts, political events, ideas, conventions, problems, trends, personalities, chronology and generalizations etc. related to the study of History of Medieval India. The student should be able to recall, recognize, show and read the history of the medieval times.

Understanding: The student should develop understanding of terms, facts, important events, trends, etc., related to medieval India. The student is able to classify facts, illustrate events, compare and contrast events, explain events, discriminate, identify, arrange facts, detect the errors, interpret and extract.

Critical Thinking: The subject leads to develop the interest in the study of medieval Indian history. It also creates a critical thinking ability among the students. The student will be able to identify, analyse, collect, select, draw and verify the historical facts and figures.

Practical Skills: The subject enables the students to develop practical skills which help in the study and understanding of historical facts. The student should be able to draw maps, charts, diagrams and prepare models, etc.

Learning Outcomes: This course enables students to explore various aspects of political, diplomatic relations of the rulers of medieval times in historical perspective that discusses numerous political practices that have evolved over centuries. The students will gather knowledge about the various dynasties, political diplomacy, results and impact wars and battles the people. It also helps the students to develop the knowledge and awareness about the political ideologies.

Assessment:**Weight age for assessment (in percentage)****Outlines for continuous assessment activities for C1 and C2**

| Formative Assessment | | | |
|---------------------------------------|-----------|-----------|--------------------|
| Activities | C1 | C2 | Total Marks |
| Session Test | 10 Marks | 10 | 20 |
| Sessions/Presentations/Activities | 10 Marks | | 10 |
| Case Study/Assignment/Field Work Etc. | | 10 | 10 |
| Total | | | 40 |

[illegible]

| | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| Analytical Reasoning | X | X | X | X | X | X | X | X | | |
| Cooperation and Team Work | X | X | X | X | X | | | | | |
| Reflective Thinking | X | X | X | X | X | X | X | X | X | X |
| Self-Motivated Learning | X | X | X | X | X | X | X | X | X | X |
| Diversity Management and Inclusive Approach | X | X | X | X | X | X | X | X | X | X |
| Moral and Ethical Awareness Reasoning | X | X | X | X | X | X | X | X | X | X |
| Lifelong Learning | X | X | X | X | X | X | X | X | X | X |

Course Articulation Matrix relates course outcomes of course with the corresponding program outcomes whose attainment is attempted in this course. Mark **“X”** the intersection cell if a course outcomes addresses a particular program outcome.

BA

Semester 4 (DSC-8)

CULTURAL HISTORY OF INDIA (From Saraswati - Indus culture to 1206 CE)

Objectives in this lesson

students investigate various facets of Indian culture. Throughout the chapter, emphasis will be on the concept and importance of Indian culture through various ages of India. After studying this lesson you will be able to:

- understand the concept and meaning of culture;
- establish the relationship between culture and civilization;
- establish the link between culture and heritage;
- discuss the role and impact of culture in human life.
- describe the distinctive features of Indian culture;
- identify the central points and uniqueness of Indian culture;
- explain the points of diversity and underlying unity in it; and
- trace the influence and significance of geographical features on Indian culture.

| CONTENT OF COURSE | 42 HOURS |
|---|----------|
| UNIT-I Indian Culture: An Introduction | |
| CHAPTER-1 Characteristics of Indian culture. | 06 |
| CHAPTER-2 Significance of Geography on Indian Culture. | 06 |
| CHAPTER-3 Religion and Philosophy in India: Ancient Period: Pre-Vedic and Vedic Religion, Buddhism and Jainism, Indian philosophy. | 06 |
| UNIT-II A Brief History of Indian Arts and Architecture | |
| CHAPTER-4 Indian Languages and Literature – Nagari – Devanagari, Grantha – Dravidian languages – Kannada. | 05 |
| CHAPTER-5 Evolution of script and languages in India: Harappan Script and Brahmi Script. | 03 |
| CHAPTER-6 Short History of the Sanskrit literature: The Vedas, and Upanishads , Epics: Ramayana and Mahabharata - History of Buddhist and Jain Literature in Pali, Prakrit . | 04 |
| UNIT-III ART&ARCHITECTURE | |
| CHAPTER-7 Indian Art & Architecture: Gandhara School and Mathura School of Art; - Hindu Temple Architecture, Buddhist Architecture- Indian Painting Tradition: ancient painting at Ajantha. | 04 |
| CHAPTER-8 Performing Arts: Divisions of Indian classical music: Hindustani and Carnatic, -Dances of India: Various Dance forms: Classical and Regional, | 04 |
| CHAPTER-9 Indian Culture in South East Asia | 04 |

Books for Reference

1. Gore, M. S., Unity in Diversity: The Indian Experience in Nation-Building, Rawat Publication, Jaipur, 2002.
2. Kabir, Humayun N, National Information and Publications Ltd., Mumbai, 1946.
3. Malik, S. C., Understanding Indian Civilisation : A Framework of Enquiry, Indian Institute of Advanced Study, Simla, 1975.
4. Mukerji, D. P., Sociology of Indian Culture, Rawat Publications, Jaipur, 1948/1979.
5. Pandey, Govind Chandra, Foundations of Indian Culture, Books and Books, New Delhi, 1984.

Pedagogy:

Knowledge: The student should acquire knowledge of terms, concepts, political events, ideas, conventions, problems, trends, personalities, chronology and generalizations etc. related to the study of Cultural History of India (From Saraswati - Indus Culture to 1206 CE). The student should be able to recall, recognize, show and read the history of the region.

Understanding: The student should develop understanding of terms, facts, important events, trends, etc. related to the history of Cultural History of India (From Saraswati - Indus Culture to 1206 CE). The student is able to classify facts, illustrate events, compare and contrast events, explain events, discriminate, identify, arrange facts, detect the errors, interpret and extract.

Critical Thinking: The subject leads to develop the interest in the study of History of Cultural History of India (From Saraswati - Indus Culture to 1206 CE). It also creates a critical thinking ability among the students. The student will be able to identify, analyse, collect, select, draw and verify the historical facts.

Practical Skills: The subject enables the students to develop practical skills which help in the study and understanding of historical facts. The student should be able to draw maps, charts, diagrams and prepare models, etc.

Learning Outcomes: This course enables students to explore various aspects of political, Culture and Heritage of Cultural History of India (From Saraswati - Indus Culture to 1206 CE) in historical perspective that discusses numerous cultural practices that have evolved over centuries. The students will gather knowledge about the cultural heritage, cultural forms and cultural expressions performing arts, fairs and festivals.

Assessment: Weight age for assessment (in percentage)

Outlines for continuous assessment activities for C1 and C2

| Formative Assessment | | | |
|---------------------------------------|----------|----|-------------|
| Activities | C1 | C2 | Total Marks |
| Session Test | 10 Marks | 10 | 20 |
| Sessions/Presentations/Activities | 10 Marks | | 10 |
| Case Study/Assignment/Field Work Etc. | | 10 | 10 |
| Total | | | 40 |

OPEN ELECTIVE

| | |
|--|-------------------------------------|
| Course Title: Freedom Movement in India (1885-1947) | |
| Total contact Hours: 39-42 | Course Credits: 3 |
| Formative Assessment Marks: 40 | Duration of ESA/Exam: 2hours |
| Model Syllabus Authors: | Summative Assessment Marks:60 |

Course Pre-requisites(s): History of Freedom Movement in India (1885-1947).

Course Outcomes (Cos):

At the end of the course the students should be able to:

(Write 3-7 course outcomes. Course outcomes are statements of observable student's actions that serve as evidence of knowledge, skills and values acquired in this course)

- Understand the History of Freedom Movement in India (1885-1947). Analyse the importance of causes for backwardness of this region.
- Understand the influence of History of Freedom Movement in India (1885-1947).
- Understand the political, Social, Religious and Cultural history of the region.
- Appreciate the divergent cultural and communal harmony of this region.

Course Articulation Matrix: Mapping of Course Outcomes (OCs) with Program Outcomes (Pos 1-12).

[illegible]

| | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| Cooperation and Team Work | X | X | X | X | X | | | | | |
| Reflective Thinking | X | X | X | X | X | X | X | X | X | X |
| Self-Motivated Learning | X | X | X | X | X | X | X | X | X | X |
| Diversity Management and Inclusive Approach | X | X | X | X | X | X | X | X | X | X |
| Moral and Ethical Awareness Reasoning | X | X | X | X | X | X | X | X | X | X |
| Lifelong Learning | X | X | X | X | X | X | X | X | X | X |

Course Articulation Matrix relates course outcomes of course with the corresponding program outcomes whose attainment is attempted in this course. Mark **“X”** the intersection cell if a course outcomes addresses a particular program outcome.

BA**O.E IV Semester****O.E-4: Freedom Movement in India (1885-1947)**

| Course 1 | | Course 2 | |
|--------------------------|----------------------------------|--------------------------|----------------------------------|
| Number of Theory Credits | Number of lecture hours/semester | Number of Theory Credits | Number of lecture hours/semester |
| 3 | 39 or 42 | 3 | 39 or 42 |

| Content of Course -1 | 39/42 Hrs |
|---|-----------|
| Unit – 1 Indian Nationalism | 12/14 |
| Chapter No.1 Genises of Indian National Congress-Moderate-Objectives-Techniques-Partion of Bengal-Swadeshi Movement | 05 |
| Chapter No.2 Split of Congress-Extremists-Objectives-Techniques, Lalalajpat Ray-Balagandharanatha Tilak-Bipan Chandra Pal-Arabindo Ghosh | 05 |
| Chapter No.3 Revolutionary Movement-Bhagat Singh-Chandra Sheker Azad-Rajaguru, Sukh Dev. Revolutionary Women-Kumudini Mitra Busu – Madam Bhikaji Cama – Preethi Latha Waddedar | 04 |
| Unit – 2 1914 and After | 10/12 |
| Chapter No.4 First World War and Indian Nationalism | 04 |
| Chapter No.5 Home Rule Movement-Balagangadharanatha Tilak and AnniBesant | 03 |
| Chapter No.6 Luknow Pact-1916-Rowllet Act-Jallianwala Bagh Massacre | 04 |
| Unit – 3 Gandhian Era | 15/17 |
| Chapter No.7 Early Experiments of Gandhi-Non Co-operation Movement-Constructive Programmes-Swaraj Party-Siman Commission | 06 |
| Chapter No.8 Lahore Congress-Salt Sathyagraha-Round Table Conference-Communal Award-Poona Pact-Subaschandra Bose-INA | 06 |
| Chapter No.9 Partion and Independence: Growth of Communalism Two Nation Theory-August offer-Crips Proposal-Quit India Movement-Cabinet Mission-Mount Batten Plan-1947 Indian Independence Act. | 05 |

Books for Reference:

1. Asharani- Gandhian Non-Violence and Indian Freedom Struggle
2. Bipan Chandra- Indian Struggle for Independence
3. Bipan Chandra-Communalism and Modern India
4. Bukshi S.R-Gandhi and Dandi March
5. Dominique Larry Collins-Freedom at Midnight
6. Judith M Brown-Gandhi's Rise to Power, Indian Politics 1915-22
7. Lakshmi Jain- History of Freedom Movement in India
8. Moulana Abdul Khalam Azad-India Wins Freedom
9. Richard Sesan and Sekhar Bandyopadhyay- Congress and Indian Nationalism -From Plassey to Partition Senley Wolfort
10. Shankara Narayana Rao V.S-Swatantrada Guri Bharatada Dari
11. Shankara Narayana Rao V.S-Swatantraya Gangeya Savira Toregalu
12. Subas Chndra Bose-The Indian Struggle
13. Sumit Sarkar-Modern India
14. Tharachand- History of the Freedom Movement in India
15. DzsÄÄPÄ --sÄÄVÄZÄ EwÄÄÄ - ¥ÉÆæ.Dgi.gÄdt ÄÄvÄÄÜ qÄ.£ÄUÉÄ±i J.1

Pedagogy:

Knowledge: The student should acquire knowledge of terms, concepts, political events, ideas, conventions, problems, trends, personalities, chronology and generalizations etc. related to the study of Freedom Movement in India (1885-1947). The student should be able to recall, recognize, show and read the history of the region.

Understanding: The student should develop understanding of terms, facts, important events, trends, etc. related to the history of Freedom Movement in India (1885-1947). The student is able to classify facts, illustrate events, compare and contrast events, explain events, discriminate, identify, arrange facts, detect the errors, interpret and extract.

Critical Thinking: The subject leads to develop the interest in the study of History of Freedom Movement in India (1885-1947). It also creates a critical thinking ability among the students. The student will be able to identify, analyse, collect, select, draw and verify the historical facts.

Practical Skills: The subject enables the students to develop practical skills which help in the study and understanding of historical facts. The student should be able to draw maps, charts, diagrams and prepare models, etc.

Learning Outcomes: This course enables students to explore various aspects of political, Culture and Heritage of Freedom Movement in India (1885-1947) in historical perspective that discusses numerous cultural practices that have evolved over centuries. The students will gather knowledge about the cultural heritage, cultural forms and cultural expressions performing arts, fairs and festivals.

Assessment: Weight age for assessment (in percentage)

Outlines for continuous assessment activities for C1 and C2

| Formative Assessment | | | |
|---------------------------------------|-----------|-----------|--------------------|
| Activities | C1 | C2 | Total Marks |
| Session Test | 10 Marks | 10 | 20 |
| Sessions/Presentations/Activities | 10 Marks | | 10 |
| Case Study/Assignment/Field Work Etc. | | 10 | 10 |
| Total | | | 40 |

Semester 4

| | |
|---|-------------------------------|
| Course Title: Principles and Practice of Museology | |
| Total contact Hours: 39-42 | Course Credits: 3 |
| Formative Assessment Marks: 40 | Duration of ESA/Exam: 2hours |
| Model Syllabus Authors: | Summative Assessment Marks:60 |

Course Pre-requisites(s): Principles and Practice of Museology

Course Outcomes (Cos):

At the end of the course the students should be able to:

(Write 3-7 course outcomes. Course outcomes are statements of observable student's actions that serve as evidence of knowledge, skills and values acquired in this course)

- Understand the History of Principles and Practice of Museology.
- Analyse the importance of causes for backwardness of this region.
- Understand the influence of History of Principles and Practice of Museology.
- Understand the political, Social, Religious and Cultural history of the region.
- Appreciate the divergent cultural and communal harmony of this region.

Course Articulation Matrix: Mapping of Course Outcomes (OCs) with Program Outcomes (Pos 1-12).

[illegible]

| | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| Self-Motivated Learning | X | X | X | X | X | X | X | X | X | X |
| Diversity Management and Inclusive Approach | X | X | X | X | X | X | X | X | X | X |
| Moral and Ethical Awareness Reasoning | X | X | X | X | X | X | X | X | X | X |
| Lifelong Learning | X | X | X | X | X | X | X | X | X | X |

Course Articulation Matrix relates course outcomes of course with the corresponding program outcomes whose attainment is attempted in this course. Mark **“X”** the intersection cell if a course outcomes addresses a particular program outcome.

BA**Semester 4****PRINCIPLES AND PRACTICE OF MUSEOLOGY**

| Content of Course 1 | 37 Hours |
|--|---------------------|
| UNIT -1 Introduction to Museology | |
| Chapter-I | 5 |
| History of Museums and Collection - Definition and scope of Museum. | |
| Chapter-II | 4 |
| General Principles of Museums. Functions of Museums | |
| Chapter-III | 4 |
| Museum Movement in Indian subcontinent, Europe, and Western Hemisphere. | |
| UNIT -2 : Functions and types Museums | |
| Chapter-IV | 5 |
| Functions of Museums: (a.) Collection (b.) Identification (c.) Preservation (d.) Documentation (e.) Presentation (Exhibition) (f.) Research (g.) Educational activities | |
| Chapter-V | 4 |
| Various Types of Museums: Archaeology museums, Art museums History museums, Maritime museums ,Military and war museums, Science museums | |
| Chapter-VI | 3 |
| New trends in Museums and Legislations concerning Museums. | |
| UNIT -3 : Management and Administration | |
| Chapter-VII | 5 |
| Museum Management and Administration: 1. Location and Surrounding of Museums (a.) Selection of site (b.) Surrounding (c.) Use of space, design (d.) Planning (e.) Construction of museum (f.) Special Problems (war. flood, fire & earthquake etc.). | |
| Chapter -VIII | 3 |
| Museum Conservation and Preservation. 1. General Principles of Conservation (a) Preventive measures (b.) Curative measures | |
| Chapter -IX | 4 |
| Classification of Museums based on the nature of collections, concepts of eco Museum, Personallia Museums, Children Museums, and Virtual Museums. | |

Books for Reference

1. Dr. V. Jayaraj - Museology - Heritage Management - Seawaves Printers, Chennai - 86, 2005
2. M.L. Nigam - Fundamentals of Museology, Deva Publications, Hyderabad, 1985
3. Grace Morley - The Museum and its functions, Ed. Saifur Rahman dar, Lahore Museum, Lahore, 1981
4. Dr. V. Jayaraj - Handbook on Conservation in Museums Published by the Commissioner of Museums, Chennai, 1995
5. J. Smifa, J. Baxi and Vinod P. Dwivedi - Museum Storage, Modern Museum, V.P. Abhinav Publications, New Delhi, 1985
6. Agarwala. V.S. - Museum studies, Prithivi Prakashan, Varanashi, 1978
7. Grace Morley - Museum today, Lucknow, 1981

Pedagogy:

Knowledge: The student should acquire knowledge of terms, concepts, political events, ideas, conventions, problems, trends, personalities, chronology and generalizations etc. related to the study of History of Principles and Practice of Museology. The student should be able to recall, recognize, show and read the history of the region.

Understanding: The student should develop understanding of terms, facts, important events, trends, etc. related to the History of Principles and Practice of Museology. The student is able to classify facts, illustrate events, compare and contrast events, explain events, discriminate, identify, arrange facts, detect the errors, interpret and extract.

Critical Thinking: The subject leads to develop the interest in the study of Principles and Practice of Museology. It also creates a critical thinking ability among the students. The student will be able to identify, analyse, collect, select, draw and verify the historical facts.

Practical Skills: The subject enables the students to develop practical skills which help in the study and understanding of historical facts. The student should be able to draw maps, charts, diagrams and prepare models, etc.

Learning Outcomes: This course enables students to explore various aspects of political, Culture and Heritage and also the cultural diversity of Principles and Practice of Museology in historical perspective that discusses numerous cultural practices that have evolved over centuries. The students will gather knowledge about the cultural heritage, cultural forms and cultural expressions performing arts, fairs and festivals.

Assessment: Weight age for assessment (in percentage)

Outlines for continuous assessment activities for C1 and C2

| Formative Assessment | | | |
|---------------------------------------|-----------|-----------|--------------------|
| Activities | C1 | C2 | Total Marks |
| Session Test | 10 Marks | 10 | 20 |
| Sessions/Presentations/Activities | 10 Marks | | 10 |
| Case Study/Assignment/Field Work Etc. | | 10 | 10 |
| Total | | | 40 |

[As per NEP-2020 Guidelines]

THIRD SEMESTER

| Pape rNo. | Course | Title of the Course | Instructi on Hours per week | Exam Duratio n | Marks | | | Credits |
|---------------|-----------|--|---|----------------------|-------|-----|-------|---------|
| | | | | | IA | ETE | Total | |
| 1. 1 | DSC- 5 | Political History of India (From Indus Culture upto 1206) | 3 | 2 | 40 | 60 | 100 | 3 |
| 1. 2 | DSC- 6 | History of Coastal Karnataka and Kodagu | 3 | 2 | 40 | 60 | 100 | 3 |
| 1. 3 | OE-3 | Introduction to Epigraphy OR Freedom Movement in Karnataka (1800- 1947) | 3 | 2 | 40 | 60 | 100 | 3 |
| Total Credits | | | | | | | | 9 |

FOURTH SEMESTER

| Pape rNo. | Course | Title of the Course | Instructio nHours per week | Exam Duratio n | Marks | | | Credits |
|---------------|------------|--|----------------------------------|----------------------|-------|-----|-------|---------|
| | | | | | IA | ETE | Total | |
| 2. 1 | DSC-7 | History of Medieval India | 3 | 2 | 40 | 60 | 100 | 3 |
| 2. 2 | DSC - 8 | Cultural History of India (From Saraswati - Indus Culture to 1206 CE). | 3 | 2 | 40 | 60 | 100 | 3 |
| 2. 3 | OE-4 | Freedom Movement in India (1885-1947) OR Principles and Practice of Museology | 3 | 2 | 40 | 60 | 100 | 3 |
| Total Credits | | | | | | | | 9 |

B.Com (Basic/Hons)

Programme Objectives:

1. The Course focuses mainly on enhancing the employability skills of the Commerce students
2. The introduction of updated and the need of the hour concepts and contents will make a student employable and at the same time confident in his/her day to day transactions.
3. The course also meets the requirement of the young and enterprising Indians to nurture their dreams of entrepreneurship.
4. Overall the course touches upon the humane aspect of every student pursuing it and encourages them to contribute to nation building through their intellect and social capital.

Programme Outcomes:

1. This program could provide Industries, Banking Sectors, Insurance Companies, Financing companies, Transport Agencies, Retail sector, Warehousing etc., well trained professionals to meet the requirements.
2. After completing graduation, students can get skills regarding various aspects like Marketing Manager, Human Resource Manager, over all Administration abilities of the Company.
3. Capability of the students to make decisions at personal & professional level will increase after completion of this course.
4. Students can independently start up their own Business.
5. Students can get thorough knowledge of finance and commerce. The knowledge of different specializations in Accounting, Costing, Banking, Taxation and Finance with the practical exposure helps the students to stand in organization.

Program Structure
Proposed Scheme of Teaching & Evaluation for B.Com (Basic/Hons) with
Commerce as Core subject

| Semester I | | | | | | | | |
|---------------|-------------|--|---------------------|-------------------------------------|-----|-----|-------------|---------|
| Sl. No. | Course Code | Title of the Course | Category of Courses | Teaching Hours per Week (L + T + P) | SEE | CIE | Total Marks | Credits |
| 1 | Lang.1.1 | Language-I | AECC | 3+1+0 | 60 | 40 | 100 | 3 |
| 2 | Lang.1.2 | Language-II | AECC | 3+1+0 | 60 | 40 | 100 | 3 |
| 3 | B.Com.1.1 | Financial Accounting | DSC | 3+0+2 | 60 | 40 | 100 | 4 |
| 4 | B.Com.1.2 | Management Principles and Applications | DSC | 4+0+0 | 60 | 40 | 100 | 4 |
| 5 | B.Com.1.3 | Principles of Marketing | DSC | 4+0+0 | 60 | 40 | 100 | 4 |
| 6 | B.Com.1.4 | Digital Fluency | SEC-SB | 1+0+2 | 60 | 40 | 100 | 2 |
| 7 | B.com. 1.5 | Yoga | SEC-VB | 0+0+2 | - | 50 | 50 | 1 |
| 8 | B.com. 1.6 | Health and Wellness | SEC-VB | 0+0+2 | - | 50 | 50 | 1 |
| 9 | B.Com.1.7 | Accounting for Everyone/Financial Literacy/ Managerial Economics | OEC | 3+0+0 | 60 | 40 | 100 | 3 |
| Sub-Total (A) | | | | | 420 | 380 | 800 | 25 |

| Semester II | | | | | | | | |
|---------------|-------------|--|---------------------|-------------------------------------|-----|-----|-------------|---------|
| Sl. No. | Course Code | Title of the Course | Category of Courses | Teaching Hours per Week (L + T + P) | SEE | CIE | Total Marks | Credits |
| 10 | Lang.2.1 | Language-I | AECC | 3+1+0 | 60 | 40 | 100 | 3 |
| 11 | Lang.2.2 | Language-II | AECC | 3+1+0 | 60 | 40 | 100 | 3 |
| 12 | B.Com.2.1 | Advanced Financial Accounting | DSC | 3+0+2 | 60 | 40 | 100 | 4 |
| 13 | B.Com.2.2 | Business Mathematics OR Corporate Administration | DSC | 3+0+2 | 60 | 40 | 100 | 4 |
| 14 | B.Com.2.3 | Law & Practice of Banking | DSC | 4+0+0 | 60 | 40 | 100 | 4 |
| 15 | B.Com.2.4 | Sports | SEC-VB | 0+0+2 | - | 50 | 50 | 1 |
| 16 | B.Com.2.5 | NCC/NSS/R&R(S&G)/Cultural | SEC-VB | 0+0+2 | - | 50 | 50 | 1 |
| 17 | B.Com.2.6 | Environmental Studies | AECC | 2+0+0 | 60 | 40 | 100 | 2 |
| 18 | B.Com.2.7 | Financial Environment/Investing in Stock Markets/ Public Finance | OEC | 3+0+0 | 60 | 40 | 100 | 3 |
| Sub-Total (B) | | | | | 420 | 380 | 800 | 25 |

EXIT OPTION WITH CERTIFICATION -with ability to solve well defined problems

| Semester III | | | | | | | | |
|--------------|-------------|---|---------------------|-------------------------------------|-----|-----|-------------|---------|
| Sl. No. | Course Code | Title of the Course | Category of Courses | Teaching Hours per Week (L + T + P) | SEE | CIE | Total Marks | Credits |
| 19 | Lang.3.1 | Language-I | AECC | 3+1+0 | 60 | 40 | 100 | 3 |
| 20 | Lang.3.2 | Language-II | AECC | 3+1+0 | 60 | 40 | 100 | 3 |
| 21 | B.Com.3.1 | Corporate Accounting | DSC | 3+0+2 | 60 | 40 | 100 | 4 |
| 22 | B.Com.3.2 | Business Statistics | DSC | 3+0+2 | 60 | 40 | 100 | 4 |
| 23 | B.Com.3.3 | Cost Accounting | DSC | 3+0+2 | 60 | 40 | 100 | 4 |
| 24 | B.Com.3.4 | Artificial Intelligence | SEC | 1+0+2 | 60 | 40 | 100 | 2 |
| 25 | B.Com.3.5 | Sports | SEC-VB | 0+0+2 | - | 50 | 50 | 1 |
| 26 | B.Com.3.6 | NCC/NSS/R&R(S&G)/Cultural | SEC-VB | 0+0+2 | - | 50 | 50 | 1 |
| 27 | B.Com.3.7 | Advertising Skills/Entrepreneurial Skills/ Modern Bank Management | OEC | 3+0+0 | 60 | 40 | 100 | 3 |
| Sub-Total(C) | | | | | 420 | 380 | 800 | 25 |

| Semester IV | | | | | | | | |
|--------------|-------------|---|---------------------|-------------------------------------|-----|-----|-------------|---------|
| Sl. No. | Course Code | Title of the Course | Category of Courses | Teaching Hours per Week (L + T + P) | SEE | CIE | Total Marks | Credits |
| 28 | Lang.4.1 | Language-I | AECC | 3+1+0 | 60 | 40 | 100 | 3 |
| 29 | Lang.4.2 | Language-II | AECC | 3+1+0 | 60 | 40 | 100 | 3 |
| 40 | B.Com.4.1 | Advanced Corporate Accounting | DSC | 3+0+2 | 60 | 40 | 100 | 4 |
| 31 | B.Com.4.2 | Costing Methods & Techniques | DSC | 3+0+2 | 60 | 40 | 100 | 4 |
| 32 | B.Com.4.3 | Business Regulatory Framework | DSC | 4+0+0 | 60 | 40 | 100 | 4 |
| 33 | B.Com.4.4 | Constitution of India | AECC | 2+0+0 | 60 | 40 | 100 | 2 |
| 34 | B.Com.4.5 | Sports | SEC-VB | 0+0+2 | - | 50 | 50 | 1 |
| 35 | B.Com.3.6 | NCC/NSS/R&R(S&G)/Cultural | SEC-VB | 0+0+2 | - | 50 | 50 | 1 |
| 36 | B.Com.4.7 | Business Ethics / Corporate Governance/ International Trade | OEC | 3+0+0 | 60 | 40 | 100 | 3 |
| Sub-Total(D) | | | | | 420 | 380 | 800 | 25 |

EXIT OPTION WITH DIPLOMA - **Ability to solve broadly defined problems.**

| Semester V | | | | | | | | |
|--------------|--------------------|---|---------------------|-------------------------------------|-----|-----|-------------|---------|
| Sl. No. | Course Code | Title of the Course | Category of Courses | Teaching Hours per Week (L + T + P) | SEE | CIE | Total Marks | Credits |
| 37 | B.Com.5.1 | Financial Management | DSC | 3+0+2 | 60 | 40 | 100 | 4 |
| 38 | B.Com.5.2 | Income Tax Law and Practice-I | DSC | 3+0+2 | 60 | 40 | 100 | 4 |
| 39 | B.Com.5.3 | Auditing and Assurance | DSC | 4+0+0 | 60 | 40 | 100 | 4 |
| 40 | B.Com.5.4 Elective | One Course from the Selected Elective Group | DSE - 1 | 3+1+0 | 60 | 40 | 100 | 3 |
| 41 | B.Com.5.5 Elective | GST- Law & Practice | Vocational - 1 | 2+0+2 | 60 | 40 | 100 | 3 |
| 42 | B.Com.5.6 Elective | Internship | Internship - 1 | 0+0+4 | - | 50 | 50 | 2 |
| 43 | B.Com.5.7 | Sports | SEC-VB | 0+0+2 | - | 50 | 50 | 1 |
| 44 | B.Com.5.8 | NCC/NSS/R&R(S&G)/Cultural | SEC-VB | 0+0+2 | - | 50 | 50 | 1 |
| 45 | B.Com.5.9 | Cyber Security/Ethics & Self Awareness | SEC - VB | 1+0+2 | 60 | 40 | 100 | 2 |
| Sub-Total(E) | | | | | 360 | 390 | 750 | 24 |

| Semester VI | | | | | | | | |
|----------------------|--------------------|---|---------------------|-------------------------------------|------|------|-------------|---------|
| Sl. No. | Course Code | Title of the Course | Category of Courses | Teaching Hours per Week (L + T + P) | SEE | CIE | Total Marks | Credits |
| 46 | B.Com.6.1 | Management Accounting | DSC | 3+0+2 | 60 | 40 | 100 | 4 |
| 47 | B.Com.6.2 | Income Tax Law and Practice-II | DSC | 3+0+2 | 60 | 40 | 100 | 4 |
| 48 | B.Com.6.3 | Financial Derivatives | DSC | 3+0+2 | 60 | 40 | 100 | 4 |
| 49 | B.Com.6.4 Elective | One courses from the Selected Elective Group | DSE - 2 | 3+1+0 | 60 | 40 | 100 | 3 |
| 50 | B.Com.6.5 | Basics of Spread Sheet Modelling OR Report on Study of Startups and Innovative Business Ideas | Vocational- 2 | 2+0+2 | 60 | 40 | 100 | 3 |
| 51 | B.Com.6.6 Elective | Internship | Internship - 2 | 0+0+4 | - | 50 | 50 | 2 |
| 52 | B.Com.6.7 | Sports | SEC-VB | 0+0+2 | - | 50 | 50 | 1 |
| 53 | B.Com.6.8 | NCC/NSS/R&R(S&G)/Cultural | SEC-VB | 0+0+2 | - | 50 | 50 | 1 |
| 54 | B.Com.6.9 | Professional Communication | SEC - SB | 2+0+0 | 60 | 40 | 100 | 2 |
| Sub-Total(F) | | | | | 360 | 390 | 750 | 24 |
| Grand Total - Degree | | | | | 2400 | 2300 | 4700 | 148 |

EXITOPTION WITH BACHELOR DEGREE- **Ability to solve complex problems that are ill-structured requiring multi-disciplinary skills to solve them.**

| Semester VII | | | | | | | | |
|--------------|-------------|---|---------------------|-------------------------------------|-----|-----|-------------|---------|
| Sl. N o. | Course Code | Title of the Course | Category of Courses | Teaching Hours per Week (L + T + P) | SEE | CIE | Total Marks | Credits |
| 55 | B.Com.7.1 | International Business | DSC | 4+1+0 | 60 | 40 | 100 | 4 |
| 56 | B.Com.7.2 | Advanced Business Statistics | DSC | 4+1+0 | 60 | 40 | 100 | 4 |
| 57 | B.Com.7.3 | Advanced Financial Management | DSC | 4+1+0 | 60 | 40 | 100 | 4 |
| 58 | B.Com.7.4 | One Course from the Selected Elective Group | DSE - 5 | 3+1+0 | 60 | 40 | 100 | 3 |
| 59 | B.Com.7.5 | ERP Applications | Vocational-3 | 2+0+2 | 60 | 40 | 100 | 3 |
| 60 | B.Com.7.6 | Research Methodology | - | 2+0+2 | 60 | 40 | 100 | 3 |
| Sub-Total(G) | | | | | 360 | 240 | 600 | 21 |

| Semester VIII | | | | | | | | |
|---------------------|-------------|--|---------------------|-------------------------------------|----------------|----------------|----------------|------------|
| Sl. No. | Course Code | Title of the Course | Category of Courses | Teaching Hours per Week (L + T + P) | SEE | CIE | Total Marks | Credits |
| 61 | B.Com.8.1 | Financial Reporting-IND.AS | DSC | 3+1+0 | 60 | 40 | 100 | 3 |
| 62 | B.Com.8.2 | Strategic Financial Management | DSC | 3+1+0 | 60 | 40 | 100 | 3 |
| 63 | B.Com.8.3 | Business Analytics OR Data Analysis & Decision Sciences | DSC | 3+1+0 | 60 | 40 | 100 | 3 |
| 64 | B.Com.8.4 | One Course from the Selected Elective Group | DSE - 5 | 3+1+0 | 60 | 40 | 100 | 3 |
| 65 | B.Com.8.5 | Managing Digital Platforms | Vocational-4 | 2+0+2 | 60 | 40 | 100 | 3 |
| 67 | B.Com.8.6 | Research Projects/Internship with Viva – voce | - | 0+0+12 | 120 | 80 | 200 | 6 |
| | | OR | | | | | | |
| | | Two Courses from the Selected Elective Group 8.5 (A) & 8.5 (B) | DSE-6 | 3+1+0 | 60* | 40* | 100* | 3* |
| | | | DSE-7 | 3+1+0 | 60* | 40* | 100* | 3* |
| Sub-Total (H) | | | | | 420/ 420* | 280/ 280* | 700/ 700* | 21/ 21* |
| GrandTotal - Honors | | | | | 3180/ 3180* | 2820/ 2820* | 6000/ 6000* | 190 |

* Students who do not opt Research Project / Internship shall take two elective courses such as 8.5 (A) & 8.5 (B).

Sub Total (H) and Grand Totals Honors vary accordingly.

BACHELOR DEGREE WITH HONORS - Experience of work place problem solving in the form of internship or research experience preparing for higher education or entrepreneurship experience.

Notes:

- One Hour of Lecture is equal to 1 Credit.
- One Hour of Tutorial is equal to 1 Credit (Except Languages).
- Two Hours of Practical is equal to 1 Credit

Acronyms Expanded

- **AECC** : **Ability Enhancement Compulsory Course**
- **DSC ©** : **Discipline Specific Core (Course)**
- **SEC-SB/VB** : **Skill Enhancement Course-Skill Based/Value Based**
- **OEC** : **Open Elective Course**
- **DSE** : **Discipline Specific Elective**
- **SEE** : **Semester End Examination**
- **CIE** : **Continuous Internal Evaluation**
- **L+T+P** : **Lecture+Tutorial+Practical(s)**

Note: Practical Classes may be conducted in the Business Lab or in Computer Lab or in Class room depending on the requirement. One batch of students should not exceed half (i.e., 50 or less than 50 students) of the number of students in each class/section. 2 Hours of Practical Class is equal to 1 Hour of Teaching, however, whenever it is conducted for the entire class (i.e., more than 50 students) 2 Hours of Practical Class is equal to 2 Hours of Teaching.

ELECTIVE GROUPS AND COURSES:

| Discipline Specific Electives – V Semester | | | | | | |
|--|------------------|------------------------------------|-----------------------|-------------------|-----------------------------|---------------------|
| Sl. No | Accounting | Finance | Banking & Insurance | Marketing | Human Resources | IT |
| 1 | Ind. AS and IFRS | Financial Markets & Intermediaries | Indian Banking System | Retail Management | Human Resources Development | Financial Analytics |

| Discipline Specific Electives – VI Semester | | | | | | |
|---|--|-------------------------------------|------------------------------------|--|----------------------------------|-----------------------------|
| 1 | e-Business & Accounting | Investment Management | Banking Innovations & Technology | Customer Relationship Marketing | Cultural Diversity at Work Place | HR Analytics |
| 2 | Accounting for Services Sector | Global Financial System & Practices | Principles & Practice of Insurance | Digital Marketing | New Age Leadership Skills | Marketing Analytics |
| 3 | Accounting for Government and Local Bodies | Risk Management | Insurance Law and Regulations | Consumer Behavior & Marketing Research | Labour Laws & Practice | ICT Application in Business |

| Discipline Specific Electives - VII Semester | | | | | | |
|--|---------------------|-----------------------|-----------------------------|-------------------------------------|---------------|------------|
| 1 | Forensic Accounting | Corporate Structuring | Banking Products & Services | Logistics & Supply Chain Management | Strategic HRM | DBMS & SQL |

| Discipline Specific Electives - VIII Semester | |
|---|--|
| 1 | Environmental Chemistry |
| 2 | Environmental Microbiology |
| 3 | Environmental Toxicology |
| 4 | Environmental Geochemistry |
| 5 | Environmental Biotechnology |
| 6 | Environmental Policy and Law |
| 7 | Environmental Impact Assessment |
| 8 | Environmental Monitoring and Assessment |
| 9 | Environmental Quality Management |
| 10 | Environmental Health and Safety |
| 11 | Environmental Risk Assessment |
| 12 | Environmental Remediation |
| 13 | Environmental Sustainability |
| 14 | Environmental Economics |
| 15 | Environmental Law and Policy |
| 16 | Environmental Science and Technology |
| 17 | Environmental Management Systems |
| 18 | Environmental Quality Management Systems |
| 19 | Environmental Health and Safety Management |
| 20 | Environmental Risk Assessment and Management |
| 21 | Environmental Remediation Technology |
| 22 | Environmental Sustainability Management |
| 23 | Environmental Economics and Policy |
| 24 | Environmental Law and Policy |
| 25 | Environmental Science and Technology |
| 26 | Environmental Management Systems |
| 27 | Environmental Quality Management Systems |
| 28 | Environmental Health and Safety Management |
| 29 | Environmental Risk Assessment and Management |
| 30 | Environmental Remediation Technology |
| 31 | Environmental Sustainability Management |
| 32 | Environmental Economics and Policy |
| 33 | Environmental Law and Policy |
| 34 | Environmental Science and Technology |
| 35 | Environmental Management Systems |
| 36 | Environmental Quality Management Systems |
| 37 | Environmental Health and Safety Management |
| 38 | Environmental Risk Assessment and Management |
| 39 | Environmental Remediation Technology |
| 40 | Environmental Sustainability Management |
| 41 | Environmental Economics and Policy |
| 42 | Environmental Law and Policy |
| 43 | Environmental Science and Technology |
| 44 | Environmental Management Systems |
| 45 | Environmental Quality Management Systems |
| 46 | Environmental Health and Safety Management |
| 47 | Environmental Risk Assessment and Management |
| 48 | Environmental Remediation Technology |
| 49 | Environmental Sustainability Management |
| 50 | Environmental Economics and Policy |
| 51 | Environmental Law and Policy |
| 52 | Environmental Science and Technology |
| 53 | Environmental Management Systems |
| 54 | Environmental Quality Management Systems |
| 55 | Environmental Health and Safety Management |
| 56 | Environmental Risk Assessment and Management |
| 57 | Environmental Remediation Technology |
| 58 | Environmental Sustainability Management |
| 59 | Environmental Economics and Policy |
| 60 | Environmental Law and Policy |
| 61 | Environmental Science and Technology |
| 62 | Environmental Management Systems |
| 63 | Environmental Quality Management Systems |
| 64 | Environmental Health and Safety Management |
| 65 | Environmental Risk Assessment and Management |
| 66 | Environmental Remediation Technology |
| 67 | Environmental Sustainability Management |
| 68 | Environmental Economics and Policy |
| 69 | Environmental Law and Policy |
| 70 | Environmental Science and Technology |
| 71 | Environmental Management Systems |
| 72 | Environmental Quality Management Systems |
| 73 | Environmental Health and Safety Management |
| 74 | Environmental Risk Assessment and Management |
| 75 | Environmental Remediation Technology |
| 76 | Environmental Sustainability Management |
| 77 | Environmental Economics and Policy |
| 78 | Environmental Law and Policy |
| 79 | Environmental Science and Technology |
| 80 | Environmental Management Systems |
| 81 | Environmental Quality Management Systems |
| 82 | Environmental Health and Safety Management |
| 83 | Environmental Risk Assessment and Management |
| 84 | Environmental Remediation Technology |
| 85 | Environmental Sustainability Management |
| 86 | Environmental Economics and Policy |
| 87 | Environmental Law and Policy |
| 88 | Environmental Science and Technology |
| 89 | Environmental Management Systems |
| 90 | Environmental Quality Management Systems |
| 91 | Environmental Health and Safety Management |
| 92 | Environmental Risk Assessment and Management |
| 93 | Environmental Remediation Technology |
| 94 | Environmental Sustainability Management |
| 95 | Environmental Economics and Policy |
| 96 | Environmental Law and Policy |
| 97 | Environmental Science and Technology |
| 98 | Environmental Management Systems |
| 99 | Environmental Quality Management Systems |
| 100 | Environmental Health and Safety Management |
| 101 | Environmental Risk Assessment and Management |
| 102 | Environmental Remediation Technology |
| 103 | Environmental Sustainability Management |
| 104 | Environmental Economics and Policy |
| 105 | Environmental Law and Policy |
| 106 | Environmental Science and Technology |
| 107 | Environmental Management Systems |
| 108 | Environmental Quality Management Systems |
| 109 | Environmental Health and Safety Management |
| 110 | Environmental Risk Assessment and Management |
| 111 | Environmental Remediation Technology |
| 112 | Environmental Sustainability Management |
| 113 | Environmental Economics and Policy |
| 114 | Environmental Law and Policy |
| 115 | Environmental Science and Technology |
| 116 | Environmental Management Systems |
| 117 | Environmental Quality Management Systems |
| 118 | Environmental Health and Safety Management |
| 119 | Environmental Risk Assessment and Management |
| 120 | Environmental Remediation Technology |
| 121 | Environmental Sustainability Management |
| 122 | Environmental Economics and Policy |
| 123 | Environmental Law and Policy |
| 124 | Environmental Science and Technology |
| 125 | Environmental Management Systems |
| 126 | Environmental Quality Management Systems |
| 127 | Environmental Health and Safety Management |
| 128 | Environmental Risk Assessment and Management |
| 129 | Environmental Remediation Technology |
| 130 | Environmental Sustainability Management |
| 131 | Environmental Economics and Policy |
| 132 | Environmental Law and Policy |
| 133 | Environmental Science and Technology |
| 134 | Environmental Management Systems |
| 135 | Environmental Quality Management Systems |
| 136 | Environmental Health and Safety Management |
| 137 | Environmental Risk Assessment and Management |
| 138 | Environmental Remediation Technology |
| 139 | Environmental Sustainability Management |
| 140 | Environmental Economics and Policy |
| 141 | Environmental Law and Policy |
| 142 | Environmental Science and Technology |
| 143 | Environmental Management Systems |
| 144 | Environmental Quality Management Systems |
| 145 | Environmental Health and Safety Management |
| 146 | Environmental Risk Assessment and Management |
| 147 | Environmental Remediation Technology |
| 148 | Environmental Sustainability Management |
| 149 | Environmental Economics and Policy |
| 150 | Environmental Law and Policy |
| 151 | Environmental Science and Technology |
| 152 | Environmental Management Systems |
| 153 | Environmental Quality Management Systems |
| 154 | Environmental Health and Safety Management |
| 155 | Environmental Risk Assessment and Management |
| 156 | Environmental Remediation Technology |
| 157 | Environmental Sustainability Management |
| 158 | Environmental Economics and Policy |
| 159 | Environmental Law and Policy |
| 160 | Environmental Science and Technology |
| 161 | Environmental Management Systems |
| | |

| | | | | | | |
|---|-------------------------------|----------------------------------|---------------------------------|--------------------|------------------------------------|--|
| 1 | Innovations in Accounting | Corporate Valuation | e-Banking | E - Commerce | International HRM | Web & Social Intelligence |
| 2 | Accounting Information System | Analysis of Financial Statements | Insurance Planning & Management | Services Marketing | Employee Welfare & Social Security | Artificial Intelligence & Machine Learning in Business |

NOTE: Student shall continue with the same elective group in V and VI semesters, however, he/she may change the elective group in VII semester, but shall continue in the same group in VIII semester.

B.com- Question Paper Pattern

End Semester Exams Bachelor of Commerce- B.Com

Course Code:

Name of the Course:

Duration: 2Hour

Total Marks: 60

SECTION-A

I. Answer any five of the following questions.

Questions are asked on Remembering (5x2=10)

- 1.
- 2.
- 3.
- 4.
- 5.
- 6.
- 7.
- 8.

SECTION-B

II. Answer any four of the following questions.

Questions are asked on Understanding & Applying (4x5=20)

- 9.
- 10.
- 11.
- 12.
- 13.
- 14.

SECTION-C

III. Answer any two of the following questions.

Questions are asked on analyzing &evaluating

(2x15=30)

15.

16.

17.

18.

Note: Break up of 40 marks for Continuous Internal Evaluation (CIE) is as follows:

- 20 marks for 2 internal exams per course per semester.
- 10 marks for Seminar/ Presentation/Activity/Project/Field work/ Assignment.
- 10 marks for Case study/ Excel / Zoho books.

Ist Semester B.Com

Course Contents

- 1.1 Financial Accounting**
- 1.2 Management Principles & Applications**
- 1.3 Principles of Marketing**
- 1.4 Digital Fluency**
- 1.5 Yoga**
- 1.6 Health and Wellness**
- 1.7 Accounting for Everyone / Financial Literacy/Managerial Economics**

| | | |
|---|------------------------------|------------------------------------|
| Name of the Program: Bachelor of Commerce (B.Com.) Course Code: B.Com.1.1 Name of the Course: Financial Accounting | | |
| Course Credits | No. of Hours per Week | Total No. of Teaching Hours |
| 4 Credits | 4 Hrs | 48 Hrs |
| Pedagogy: Classrooms lecture, tutorials, Group discussion, Seminar, Case studies & field work etc., | | |
| Course Outcomes: On successful completion of the course, the Students will be able to <ol style="list-style-type: none"> Understand the theoretical framework of accounting as well accounting standards. Demonstrate the preparation of financial statement of manufacturing and non-manufacturing entities of sole proprietors. Exercise the accounting treatments for consignment transactions & events in the books of consignor and consignee. Understand the accounting treatment for royalty transactions & articulate the Royalty agreements. Outline the emerging trends in the field of accounting. | | |
| Syllabus: | | Hours |
| Module No. 1: Theoretical Framework of Accounting | | 10 |
| Introduction-Meaning and Scope of Accounting- Accounting Terminologies- Uses and Users of Accounting information-Accounting Process-Basis of Accounting: Cash and Accrual basis-Branches of Accounting-Accounting Principles-Concepts and Conventions-Accounting Standards-Indian Accounting Standards (IND AS). | | |
| Module No. 2: Financial Statements of Sole Proprietors | | 10 |
| Introduction-Meaning of Sole Proprietor-Financial Statements of Non-Manufacturing Entities: Trading Account-Income Statement/Profit & Loss Account-Balance Sheet;Financial Statements of Manufacturing Entities: Manufacturing Account-Trading Account-Profit & Loss accountant-Balance Sheet. | | |
| Module No. 3: Consignment Accounts | | 10 |
| Introduction-Meaning of Consignment-Consignment vs Sales-Pro-forma Invoice-Accounts Sales-Types Commission-Accounting for Consignment Transactions & Events in the books of Consignor and Consignee - Treatment of Normal & Abnormal Loss. -Valuation of Closing Stock-Goods sent at Cost Price and Invoice Price. | | |
| Module No. 4:Royalty Accounts | | 10 |
| Introduction-Meaning-Types of Royalty-Technical Terms: Lessee, Lessor, Minimum Rent - Short Workings -Recoupment of Short Working-Accounting Treatment in the books of Lessee and lessor - Journal Entries and Ledger Accounts including minimum rent account. | | |
| Module No. 5: Emerging Trends in Accounting | | 08 |
| Digital Transformation of Accounting-Big Data Analytics in Accounting-Cloud Computing in accounting- Accounting with drones- Forensic Accounting- Accounting for Planet--Creative Accounting-Outsourced Accounting- Predictive Accounting (Theory Only). | | |
| Skill Developments Activities: <ol style="list-style-type: none"> Collect Annual Reports of sole proprietors and identify accounting concepts and conventions followed in the preparation of the annual reports. Collect Annual Reports of sole proprietors and identify the different components. | | |

3. Preparation of Proform invoice and accounts sales with imaginary figures.
4. Collect Royalty Agreements and draft dummy royalty agreements with imaginary figures.
5. Identify latest innovations and developments in the field of accounting.
6. Any other activities, which are relevant to the course.

Text Books:

1. ICAI Study Materials on Principles & Practice of Accounting, Accounting and Advanced Accounting.
2. SP Iyengar (2005), Advanced Accounting, Sultan Chand & Sons, Vol. 1.
3. Robert N Anthony, David Hawkins, Kenneth A. Merchant, (2017) Accounting: Text and Cases, McGraw-Hill Education, 13th Edition.
4. Charles T. Horngren and Donna Philbrick, (2013) Introduction to Financial Accounting, Pearson Education, 11th Edition.
5. J.R. Monga, Financial Accounting: Concepts and Applications. Mayur Paper Backs, New Delhi, 32nd Edition.
6. S.N. Maheshwari, and. S. K. Maheshwari. Financial Accounting. Vikas Publishing House, New Delhi, 6th Edition.
7. B.S. Raman (2008), Financial Accounting Vol. I & II, United Publishers & Distributors
8. Compendium of Statements and Standards of Accounting. The Institute of Chartered Accountants of India, New Delhi.

Note: Latest edition of text books may be used.

| | | |
|--|------------------------------|------------------------------------|
| Name of the Program: Bachelor of Commerce (B.Com.) Course Code: B.Com.1.2 Name of the Course: Management Principles and Applications | | |
| Course Credits | No. of Hours per Week | Total No. of Teaching Hours |
| 4 Credits | 4 Hrs | 48 Hrs |
| Pedagogy: Classrooms lecture, Case studies, Group discussion, Seminar & field work etc., | | |
| Course Outcomes: On successful completion of the course, the Students will be able to a) Understand and identify the different theories of organizations, which are relevant in the present context. b) Design and demonstrate the strategic plan for the attainment of organizational goals. c) Differentiate the different types of authority and chose the best one in the present context. d) Compare and chose the different types of motivation factors and leadership styles. e) Choose the best controlling techniques for better productivity of an organisation. | | |
| Syllabus: | | Hours |
| Module No. 1: Introduction to Management | | 10 |
| Introduction-Meaning and importance of Management-Managerial Functions- Essence of Mangership-Evolution of the Management thoughts: Classical organizational theories- Neo-Classical theories-Modern organizational theories. | | |
| Module No. 2: Planning | | 10 |
| Introduction-Meaning-Nature-Purpose-Types of plans-Planning process; Strategic planning: Concept-Process-Importance and Limitations; Environmental Analysis and diagnosis: Meaning-importance and Techniques (SWOT/TOWS/WOTS-UP-BCG Matrix-Competitor Analysis); Decision-making-Concept-Importance-Committee and Group decision making Process. | | |
| Module No. 3: Organizing | | 10 |
| Introduction-Meaning-Concept and Process of Organizing - An overview-Span of management-Different types of authority (line, staff and functional)-Decentralization-Delegation of authority; Formal and Informal Structure-Principles of Organizing; Network Organisation Structure. | | |
| Module No. 4: Staffing and Leading | | 10 |
| Introduction- Staffing: Concept of Staffing-Staffing Process; Motivation: Concept- Importance-extrinsic and intrinsic motivation-Major Motivation theories: Maslow's Need-Hierarchy Theory-Hertzberg's Two-factor Theory-Vroom's Expectation Theory; Leadership: Concept-Importance-Major theories of Leadership (Likert's scale theory, Blake and Mouten's Managerial Grid theory, House's Path Goal theory, Fred Fielder's situational Leadership), Transactional leadership, Transformational Leadership, Transforming Leadership; Communication: Concept-purpose-process-Oral and written communication-Formal and informal communication networks-Barriers to communication-Overcoming barriers to communication. | | |
| Module No. 5: Controlling and Coordination | | 8 |
| Control: Concept-Process-Limitations-Principles of Effective Control-Major Techniques of control - Ratio Analysis, ROI, Budgetary Control, EVA, PERT/CPM, Emerging issues in Management; Coordination: Meaning-Nature-Importance-Principles of Coordination. | | |

Skill Development Activities:

1. Collect the photographs and bio-data of any three leading contributors of management thoughts.
2. Visit any business organization and collect the information on types of planning adopted by them.
3. Visit any business organization and collect different types of authority followed and also the draw the organizational structure.
4. Analyze the leadership styles of any select five companies of different sectors.
5. Visit any manufacturing firm and identify the controlling system followed.
6. Any other activities, which are relevant to the course.

Text Books:

1. Harold Koontz and Heinz Weihrich (2017), Essentials of Management: An International and Leadership Perspective, McGraw Hill Education, 10th Edition.
2. Stephen P Robbins and Madhushree Nanda Agrawal (2009), Fundamentals of Management: Essential Concepts and Applications, Pearson Education, 6th Edition.
3. James H. Donnelly, (1990) Fundamentals of Management, Pearson Education, 7th Edition.
4. B.P. Singh and A.K.Singh (2002), Essentials of Management, Excel Books
5. P C Tripathi & P N Reddy (2005), Principles of Management, TMH Publications, 3rd Edition.
6. Koontz Harold (2004), Essentials of Management, Tata McGraw Hill.

Note: Latest edition of text books may be used.

| | | |
|--|------------------------------|------------------------------------|
| Name of the Program: Bachelor of Commerce (B.Com.) Course Code: B.Com.1.3 Name of the Course: Principles of Marketing | | |
| Course Credits | No. of Hours per Week | Total No. of Teaching Hours |
| 4 Credits | 4 Hrs | 48 Hrs |
| Pedagogy: Classrooms lecture, Case studies, Group discussion, Seminar & field work etc., | | |
| Course Outcomes: On successful completion of the course, the Students will be able to <ol style="list-style-type: none"> Understand the basic concepts of marketing and assess the marketing environment. Analyze the consumer behaviour in the present scenario and marketing segmentation. Discover the new product development & identify the factors affecting the price of a product in the present context. Judge the impact of promotional techniques on the customers & importance of channels of distribution. Outline the recent developments in the field of marketing. | | |
| Syllabus: | | Hours |
| Module No. 1: Introduction to Marketing | | 10 |
| Introduction-Nature-Scope-Importance of Marketing; Concepts & Approaches of Marketing; Need-Want-Demand-Customer Value-Customer Creation; Evolution of marketing; Selling vs Marketing; Marketing Environment: Concept-importance-Micro and Macro Environment. Marketing Management-Meaning-importance. | | |
| Module No. 2: Consumer Behaviour & Market segmentation | | 10 |
| Consumer Behaviour: Nature and Importance-Consumer buying decision process; Factors influencing consumer buying behaviour; Market segmentation: Concept, importance and bases; Target market selection-Positioning concept-Importance and bases; Product differentiation vs. market segmentation. Marketing Mix: Product-Price-Place & Promotion. | | |
| Module No. 3: Product and Pricing | | 10 |
| Product: Concept and importance-Product classifications-Concept of product mix; Branding-packaging and labelling; Product-Support Services; Product life-cycle; New Product Development Process; Consumer adoption process. Pricing: Significance. Factors affecting price of a product. Pricing policies and strategies. | | |
| Module No. 4: Promotion and Distribution | | 10 |
| Promotion: Nature and importance of promotion; Communication process; Types of promotion: advertising, personal selling, public relations & sales promotion, and their distinctive characteristics; Promotion mix and factors affecting promotion mix decisions. Distribution Channels and Physical Distribution: Channels of distribution - meaning and importance; Types of distribution channels; Functions of middle man; Factors affecting choice of distribution channel; Wholesaling and retailing; Types of Retailers; e-retailing, Physical Distribution. | | |
| Module No. 5: Recent Developments in Marketing | | 08 |
| Social Marketing, online marketing, direct marketing, services marketing, green marketing, Rural marketing; Consumerism, Search Engine Marketing-Mobile Marketing- Marketing Analytics-Social Media Marketing-Email Marketing-Live Video Streaming Marketing-Network Marketing, any other recent developments in Marketing. | | |
| Skill Development Activities: <ol style="list-style-type: none"> Analyze the marketing environment of your locality and identify need, wants & | | |

purchasing power of customers.

2. Collect consumer behaviour towards home appliances in your locality.
3. Visit any organization and collect the information towards pricing of the products.
4. Visit any wholesalers/Retailers; collect the role of them in marketing.
5. Identify the recent developments in the field of marketing.
6. Any other activities, which are relevant to the course.

Reference Materials:

1. Philip Kotler (2015), Principles of Marketing. 13th edition. Pearson Education.
2. SaxenaRajan, (2017) Marketing Management, Tata McGraw-Hill Publishing Company Ltd., New Delhi. Fifth Edition.
3. Kumar Arun & MeenakshiN (2016), Marketing Management, Vikas Publishing House Pvt. Ltd., New Delhi. Third Edition
4. Panda Tapan (2008), Marketing Management, Excel books, New Delhi, Second Edition.
5. Michael, J. Etzel, Bruce J. Walker, William J Stanton and Ajay Pandit. Marketing: Concepts and Cases. (Special Indian Edition)., McGraw Hill Education
6. William D. Perreault, and McCarthy, E. Jerome., Basic Marketing. Pearson Education.
7. Majaro, Simon. The Essence of Marketing. Pearson Education, New Delhi.
8. Iacobucci and Kapoor, Marketing Management: A South Asian Perspective. Cengage Learning.
9. Chhabra, T.N., and S. K. Grover. Marketing Management. Fourth Edition.

Note: Latest edition of text books may be used.

| | | |
|--|------------------------------|------------------------------------|
| Name of the Program: Bachelor of Commerce (B.Com) Course Code: B.Com. 1.7 (Open Elective Course) Name of the Course: Accounting for Everyone | | |
| Course Credits | No. of Hours per Week | Total No. of Teaching Hours |
| 3 Credits | 3 Hrs | 40 Hrs |
| Pedagogy: Classrooms lecture, Case studies, Group discussion, Seminar & field work etc., | | |
| Course Outcomes: On successful completion of the course, the Students will be able to a) Analyze various terms used in accounting; b) Make accounting entries and prepare cash book and other accounts necessary while running a business; c) Prepare accounting equation of various business transactions; d) Analyze information from company's annual report; e) Comprehend the management reports of the company. | | |
| Syllabus: | | Hours |
| Module No. 1: Introduction to Accounting | | 08 |
| Meaning, Importance and Need, Its objectives and relevance to business establishments and other organizations, and individuals. Accounting information: meaning, users and utilities, sources of accounting information. Some Basic Terms – Transaction, Account, Asset, Liability, Capital, Expenditure & Expense, Income, Revenue, Gain, Profit, Surplus, Loss, Deficit. Debit, Credit, Accounting Year, Financial Year. | | |
| Module No. 2: Transactions and Recording of Transactions | | 08 |
| Features of recordable transactions and events, Basis of recording – vouchers and another basis. Recording of transactions: Personal account, Real Account and Nominal Account; Rules for Debit and Credit; Double Entry System, journalizing transactions; Preparation of Ledger, Cash Book including bank transactions. (Simple Problems) | | |
| Module No. 3: Preparation of Financial Statements | | 08 |
| Fundamental Accounting Equation; Concept of revenue and Capital; Preparation of financial statements. (Simple problems) | | |
| Module No. 4: Company Accounts | | 08 |
| Explanation of certain terms – Public Limited Company, Private Limited Company, Share, Share Capital, Shareholder, Board of Directors, Stock Exchange, Listed Company, Share Price, Sensex - BSE, NSE; Annual report, etc. Contents and disclosures in Annual Report, Company Balance Sheet and Statement of Profit and Loss. Content Analysis based on annual report including textual analysis. | | |
| Module 5: Management Reports | | 08 |
| Reports on Management Review and Governance; Report of Board of Directors - Management discussion analysis- Annual Report on CSR - Business responsibility report - Corporate governance report - Secretarial audit report. | | |
| Skill Development Activities: 1. Download annual reports of business Organisations from the websites and go through the contents of the annual report and present the salient features of the annual report using some ratios and content analysis including textual analysis. 2. Prepare accounting equation by collecting necessary data from medium sized firm. 3. Prepare financial statements collecting necessary data from small business firms. 4. Collect the management reports of any large scale organization and analyze the same. 5. Any other activities, which are relevant to the course. | | |

Text Books:

1. Hatfield, L. (2019). Accounting Basics. Amazon Digital Services LLC.
2. Horngren, C. T., Sundem, G. L., Elliott, J. A., & Philbrick, D. (2013). Introduction to Financial Accounting. London: Pearson Education.
3. Siddiqui, S. A. (2008). Book Keeping & Accountancy. New Delhi: Laxmi Publications Pvt. Ltd.
4. Sehgal, D. (2014). Financial Accounting. New Delhi: Vikas Publishing House Pvt. Ltd.
5. Tulsian, P. C. (2007). Financial Accounting. New Delhi: Tata McGraw Hill Publishing Co. Ltd.
6. Mukharji, A., & Hanif, M. (2015). Financial Accounting. New Delhi: Tata McGraw Hill Publishing Co. Ltd.
7. Maheshwari, S. N., Maheshwari, S. K., & Maheshwari, S. K. (2018). Financial Accounting. New Delhi: Vikas Publishing House Pvt. Ltd.
8. Khan, M.Y. and Jain, P.K. Management Accounting. McGraw Hill Education.
9. Arora, M.N. Management Accounting, Vikas Publishing House, New Delhi

Note: Latest edition of text books may be used.

| | | |
|---|------------------------------|------------------------------------|
| Name of the Program: Bachelor of Commerce (B.Com) Course Code: B.Com. 1.7 (Open Elective Course) Name of the Course: Financial Literacy | | |
| Course Credits | No. of Hours per Week | Total No. of Teaching Hours |
| 3 Credits | 3 Hrs | 40 Hrs |
| Pedagogy: Classrooms lecture, Case studies, Group discussion, Seminar & field work etc., | | |
| Course Outcomes: On successful completion of the course, the Students will be able to 1. Describe the importance of financial literacy and list out the institutions providing financial services; 2. Prepare financial plan and budget and manage personal finances; 3. Open, avail, and manage/operate services offered by banks; 4. Open, avail, and manage/operate services offered by post offices; 5. Plan for life insurance and property insurance & select instrument for investment in shares | | |
| Syllabus: | | Hours |
| Module No. 1: Introduction | | 08 |
| Meaning, importance and scope of financial literacy; Prerequisites of Financial Literacy – level of education, numerical and communication ability; Various financial institutions – Banks, Insurance companies, Post Offices; Mobile App based services. Need of availing of financial services from banks, insurance companies and postal services. | | |
| Module No. 2: Financial Planning and Budgeting | | 08 |
| Concept of economic wants and means for satisfying these needs; Balancing between economic wants and resources; Meaning, importance and need for financial planning; Personal Budget, Family Budget, Business Budget and National Budget; Procedure for financial planning and preparing budget; Budget surplus and Budget deficit, avenues for savings from surplus, sources for meeting deficit. | | |
| Module No. 3: Banking Services | | 08 |
| Types of banks; Banking products and services – Various services offered by banks; Types of bank deposit accounts – Savings Bank Account, Term Deposit, Current Account, Recurring Deposit, PPF, NSC etc.; Formalities to open various types of bank accounts, PAN Card, Address proof, KYC norm; Various types of loans – short term, medium term, long term, micro finance, agricultural etc. and related interest rates offered by various nationalized banks and post office; Cashless banking, e-banking, Check Counterfeit Currency; CIBIL, ATM, Debit and Credit Card, and APP based Payment system; Banking complaints and Ombudsman. | | |
| Module No. 4: Financial Services from Post Office | | 08 |
| Post office Savings Schemes: Savings Bank, Recurring Deposit, Term Deposit, Monthly Income Scheme, Kishan Vikas Patra, NSC, PPF, Senior Citizen Savings Scheme (SCSS), Sukanya Samriddhi Yojana/ Account (SSY/SSA); India Post Payments Bank (IPPB). Money Transfer: Money Order, E-Money order. Instant Money Order, collaboration with the Western Union Financial Services; MO Videsh, International Money Transfer Service, Electronic Clearance Services (ECS), Money gram International Money Transfer, Indian Postal Order (IPO). | | |
| Module 5: Protection and Investment Related Financial Services | | 08 |
| Insurance Services: Life Insurance Policies: Life Insurance, Term Life Insurance, Endowment Policies, Pension Policies, ULIP, Health Insurance and its Plans, Comparison of policies | | |

offered by various life insurance companies. Property Insurance: Policies offered by various general insurance companies. Post office life Insurance Schemes: Postal Life Insurance and Rural Postal Life Insurance (PLI/RPLI). Housing Loans: Institutions providing housing loans, Loans under Pradhanmantri Awas Yojana – Rural and Urban.

Investment avenues in Equity and Debt Instruments: Portfolio Management: Meaning and importance; Share Market and Debt Market, Sensex and its significance; Investment in Shares – selection procedure for investment in shares; Risk element; Investment Management - Services from brokers and Institutions, and self-management; Mutual Fund.

Skill Development Activities:

1. Visit banks, post offices, and insurance companies to collect information and required documents related to the services offered by these institutions and to know the procedure of availing of these services.
2. Fill up the forms to open accounts and to avail loans and shall attach photocopies of necessary documents.
3. Prepare personal and family budget for one/six/ twelve month on imaginary figures.
4. Try to open Demat account and trade for small amount and submit the report on procedure on opening of Demat account and factors considered for trading.
5. Any other activities, which are relevant to the course.

Text Books:

1. Avadhani, V. A. (2019). Investment Management. Mumbai: Himalaya Publishing House Pvt. Ltd.
2. Chandra, P. (2012). Investment Game: How to Win. New Delhi: Tata McGraw Hill Education.
3. Kothari, R. (2010). Financial Services in India-Concept and Application. New Delhi: Sage Publications India Pvt. Ltd.
4. Milling, B. E. (2003). The Basics of Finance: Financial Tools for Non-Financial Managers. Indiana: universe Company.
5. Mittra, S., Rai, S. K., Sahu, A. P., & Starn, H. J. (2015). Financial Planning. New Delhi: Sage Publications India Pvt. Ltd.
6. Zokaityte, A. (2017). Financial Literacy Education. London: Palgrave Macmillan.

Note: Latest edition of text books may be used.

| | | |
|---|------------------------------|------------------------------------|
| Name of the Program: Bachelor of Commerce (B.Com) Course Code: B.Com. 1.7 (Open Elective Course) Name of the Course: Managerial Economics | | |
| Course Credits | No. of Hours per Week | Total No. of Teaching Hours |
| 3 Credits | 3 Hrs | 40 Hrs |
| Pedagogy: Classrooms lecture, Case studies, Group discussion, Seminar & field work etc., | | |
| Course Outcomes: On successful completion of the course, the Students will be able to 1. Describe the importance of managerial economics in decision making process. 2. Learners would be able to apply the concepts and principles in their day to day life. 3. Analyze how economic agents make decisions and choices using theoretical knowledge & practical approach. | | |
| Syllabus: | | Hours |
| Module No. 1: Nature and scope of business economics | | 08 |
| Nature of Business Economics: Meaning, definitions, nature, scope and significance of business economics. Economic laws and principles: Meaning and nature of economic laws. Economics and business environment: Economic and Non-economic factors determining business. Business objectives: Economic, Non-Economic, Human, Social and National objectives of business. | | |
| Module No. 2: Demand Analysis | | 08 |
| Law of diminishing marginal utility: Meaning, Assumptions, Illustration, Exceptions and Uses law of demand: Meaning, Demand Function, why does the demand curve slope downwards? Exceptions to the Law of demand, determinants of demand, increase and decrease in demand. Price elasticity: Meaning, types of price elasticity and methods of measurement of price elasticity. Factors of determining elasticity demand. Income elasticity, cross elasticity and promotional elasticity. | | |
| Module No. 3: Supply, Cost and Revenue analysis | | 08 |
| Supply: Meaning, Law of supply, exceptions to the law of supply and determinants of supply. Elasticity of supply: Meaning and types of elasticity of supply. Cost concepts: Opportunity cost, total cost, variable cost, fixed cost and marginal cost. Cost-output relationships in the short run and long run. Concepts of revenue: Total revenue, average revenue and marginal revenue. Revenue curves under perfect and imperfect competition. | | |
| Module No. 4: Production and market analysis | | 08 |
| Production analysis: Law of variable proportion and law of returns to scale. Perfect competition: Meaning and features. Monopoly: Meaning, features and price-output determination. Price discrimination: types, price- output determination under discriminating monopoly. Monopolistic competition: Meaning, features and price-output determination under monopolistic competition. Oligopoly: Meaning, features and types. Kinked demand curve. | | |
| Module No. 5: Business Cycles Analysis | | 08 |
| Business Cycles Analysis: Business Cycles Nature and Phases of a Business Cycle, Game Theory, Information Super Highways, Small-world Model, Theories of Business Cycle – Psychological, Profit, Monetary, Innovation, Cobweb, Samuelson and Hicks Theories. | | |

Skill Development Activities:

1. Prepare personal and family budget for one/six/ twelve month on imaginary figures.
2. Study the supply and demand theory of a product as your choice.
3. Any other activities, which are relevant to the course.

References:

1. Sundharam K.P.M. & Sundharam E.N. – Business Economics, Sultanchand & Sons, New Delhi.
2. Ahuja H.L. – Business Economics, Sultanchand & Sons, New Delhi
3. Mehta P.L., Managerial Economics, Sultanchand & Sons, New Delhi.
4. Dwivedi D.N., Managerial Economics, Vikas Publishing House Pvt. Ltd., New Delhi.
5. Mithani D.M., Managerial Economics, Himalaya Publishing House, Mumbai.
6. Peterso H. Craig and W.Cris Lewis – Managerial Economics, Pearson Education, Singapore.
7. Salvatore Dominic – Managerial Economics, McGraw Hill, New York.

Note: Latest edition of text books may be used.

IInd Semester B.Com

B. Course Contents

2.1 Advanced Financial Accounting

2.2 Business Mathematics / Corporate Administration

2.3 Law & Practice of Banking

2.4 Sports

2.5 NCC/NSS/R&R (S&G)/Cultural

2.6 Environmental Studies

2.7 Financial Environment / Investing in Stock Markets/Public Finance

| | | |
|--|------------------------------|------------------------------------|
| Name of the Program: Bachelor of Commerce (B.Com.) Course Code: B.Com.2.1 Name of the Course: Advanced Financial Accounting | | |
| Course Credits | No. of Hours per Week | Total No. of Teaching Hours |
| 4 Credits | 4 Hrs | 48 Hrs |
| Pedagogy: Classrooms lecture, Case studies, Tutorial classes, Group discussion, Seminar & field work etc., | | |
| Course Outcomes: On successful completion of the course, the Students will be able to <ol style="list-style-type: none"> Understand & compute the amount of claims for loss of stock & loss of Profit. Learn various methods of accounting for hire purchase transactions. Deal with the inter-departmental transfers and their accounting treatment. Demonstrate various accounting treatments for dependent & independent branches. Prepare financial statements from incomplete records. | | |
| Syllabus: | | Hours |
| Module No. 1: Insurance Claims for Loss of Stock & Loss of Profit | | 10 |
| Introduction-Meaning of fire-computation of Claim for loss of stock- Computations of Claim for loss of Profit-Average Clause. | | |
| Module No. 2: Hire Purchase Accounting | | 10 |
| Introduction-Meaning of hire purchase-difference between hire purchase and instalment-Nature-features-terms used-Ascertainment of Interest-Accounting for hire purchase transactions-Repossession. | | |
| Module No. 3: Departmental Accounts | | 10 |
| Introduction-meaning-advantages and disadvantages-methods of departmental accounting-basis of allocation of common expenditure among different departments-types of departments-inter department transfer and its treatment | | |
| Module No. 4: Accounting for Branches | | 10 |
| Introduction-difference between branch accounts and departmental accounts-types of branches-Accounting for dependent & independent branches; Foreign branches: Accounts for foreign branches-Techniques for foreign currency translation. (Theory only). | | |
| Module No. 5: Conversion of Single Entry into Double Entry | | 08 |
| Introduction - Meaning-Limitations of Single Entry System-Difference between Single entry and Double entry system - Problems on Conversion of Single Entry into Double Entry. | | |
| Skill Developments Activities: <ol style="list-style-type: none"> Identify the procedure & documentations involved in the insurance claims. Collect hire purchase agreements and draft dummy hire purchase agreements with imaginary figures. Identify the common expenditures of an organisation among various departments. Collect the procedure and documentations involved in the establishment of various branches. Visit any sole proprietor firm and identify the steps involved in the conversion of single entry into double entry system. Any other activities, which are relevant to the course. | | |
| Text Books: | | |

1. ICAI Study Materials on Principles & Practice of Accounting, Accounting and Advanced Accounting.
2. SP Iyengar (2005), Advanced Accounting, Sultan Chand & Sons, Vol. 1.
3. Robert N Anthony, David Hawkins, Kenneth A. Merchant, (2017) Accounting: Text and Cases, McGraw-Hill Education, 13th Edition.
4. Charles T. Horngren and Donna Philbrick, (2013) Introduction to Financial Accounting, Pearson Education, 11th Edition.
5. J.R. Monga, Financial Accounting: Concepts and Applications. Mayur Paper Backs, New Delhi, 32nd Edition.
6. S.N. Maheshwari, and. S. K. Maheshwari. Financial Accounting. Vikas Publishing House, New Delhi, 6th Edition.
7. B.S. Raman (2008), Financial Accounting Vol. I & II, United Publishers & Distributors
8. Compendium of Statements and Standards of Accounting. The Institute of Chartered Accountants of India, New Delhi.

Note: Latest edition of text books may be used.

| | | |
|--|------------------------------|------------------------------------|
| Name of the Program: Bachelor of Commerce (B.Com.) Course Code: B.Com. 2.2 Name of the Course: Business Mathematics | | |
| Course Credits | No. of Hours per Week | Total No. of Teaching Hours |
| 4 Credits | 4 Hrs | 48 Hrs |
| Pedagogy: Classrooms lecture, Case studies, Tutorial classes, Group discussion, Seminar & field work etc., | | |
| Course Outcomes: On successful completion of the course, the Students will be able to <ol style="list-style-type: none"> Understand the number system and indices applications in solving basic business problems. Apply concept of commercial arithmetic concepts to solve business problems. Make use of theory of equation in solving the business problems in the present context. Understand and apply the concepts of Set Theory, Permutations & Combinations and Matrices solving business problems. Apply measurement of solids in solving simple business problems. | | |
| Syllabus: | | Hours |
| Module No. 1: Number System and Indices | | 10 |
| Introduction - Meaning - Natural Numbers - Even & Odd Numbers - Prime, Rational Number and its features & Irrational Numbers - simple problems on finding sum of natural, Odd and Even numbers- HCF and LCM, problems thereon; Indices-Introduction, Laws of indices, application of laws for simplification, simple problems. | | |
| Module No. 2: Commercial Mathematics | | 10 |
| Introduction - Meaning of Simple and Compound interest and problems thereon,-Annuities, types & problems on present and future value of annuity; Ratios and Proportions-meaning and problems thereon-problems on speed, time and work. | | |
| Module No. 3: Theory of Equation | | 10 |
| Introduction - Meaning-Problems on Linear equations and solving pure and adfected quadratic equations (factor and Sridharacharya methods only), problems on Simultaneous equations (Elimination method only). | | |
| Module No. 4: Set Theory, Permutations & Combinations and Matrices | | 10 |
| Introduction - Meaning & types of sets-Laws of Sets-Venn diagram-problems thereon; Meaning and problems on permutations and combinations; Matrices-Meaning & types of Matrices, simple problems on addition, subtraction and multiplication. | | |
| Module No. 5: Measurement of Solids | | 08 |
| Introduction - Meaning and problems on Area and perimeter/circumference of Triangle, Square, Rectangle, Circle, Cone and Cylinder. | | |
| Skill Developments Activities: <ol style="list-style-type: none"> Show the number of ways in which your telephone number can be arranged to get odd numbers. Visit any Commercial Bank in your area and collect the information about types of loans and the rates of interest on loans. Use Matrix principles to implement food requirement and protein for two families. Measure your classroom with the help of a tape and find the cost of the carpet for the floor area of the classroom. | | |

5. Any other activities, which are relevant to the course.

Text Books:

1. Saha and Rama Rao, Business Mathematics, HPH.
2. S.N.Dorairaj, Business Mathematics, United Publication.
3. R. Gupta, Mathematics for Cost Accountants.
4. S. P. Gupta, Business Mathematics.
5. Madappa and Sridhara Rao, Business Mathematics.
6. Padmalochana Hazarika, Business Mathematics.
7. Dr.B.H.Suresh, Quantitative Techniques, Chetana Book House.
8. Dr. Padmalochan Hazarika, A Textbook of Business Mathematics, S. Chand, New Delhi, No. 4, 2016.
9. A. P. Verma, Business Mathematics, Asian Books Private Limited, New Delhi, No. 3, January 2007.
10. D. C. Sancheti & V. K. Kapoor, Business Mathematics, S. Chand, New Delhi, 2014
11. A Lenin Jothi, Financial Mathematics, Himalaya Publications, Mumbai, No. 1, 2009.
12. B. M. Aggarwal, Business Mathematics, Ane Books Pvt. Ltd., No. 5, 2015

Note: Latest edition of text books may be used.

| | | |
|--|------------------------------|------------------------------------|
| Name of the Program: Bachelor of Commerce (B.Com.) Course Code: B.Com.2.2 Name of the Course: Corporate Administration | | |
| Course Credits | No. of Hours per Week | Total No. of Teaching Hours |
| 4 Credits | 4 Hrs | 48 Hrs |
| Pedagogy: Classrooms lecture, Case studies, Group discussion, Seminar & field work etc., | | |
| Course Outcomes: On successful completion of the course, the Students will be able to <ol style="list-style-type: none"> Understand the framework of Companies Act of 2013 and different kind of companies. Identify the stages and documents involved in the formation of companies in India. Analyze the role, responsibilities and functions of Key management Personnel in Corporate Administration. Examine the procedure involved in the corporate meeting and the role of company secretary in the meeting. Evaluate the role of liquidator in the process of winding up of the company. | | |
| Syllabus: | | Hours |
| Module No. 1: Introduction to Company | | 10 |
| Introduction - Meaning and Definition - Features - Highlights of Companies Act 2013 - - Kinds of Companies - One Person Company-Private Company-Public Company-Company limited by Guarantee-Company limited by Shares- Holding Company-Subsidiary Company-Government Company-Associate Company- Small Company-Foreign Company-Global Company-Body Corporate-Listed Company. | | |
| Module No. 2: Formation of Companies | | 10 |
| Introduction - Promotion Stage: Meaning of Promoter, Position of Promoter & Functions of Promoter, Incorporation Stage: Meaning & contents of Memorandum of Association & Articles of Association, Distinction between Memorandum of Association and Articles of Association, Certificate of Incorporation, Subscription Stage - Meaning & contents of Prospectus, Statement in lieu of Prospects and Book Building, Commencement Stage - Document to be filed, e-filing, Register of Companies, Certificate of Commencement of Business; Formation of Global Companies: Meaning - Types -Features - Legal Formalities-Administration. | | |
| Module No. 3: Company Administration | | 10 |
| Introduction - Key Managerial Personnel - Managing Director, Whole time Directors, the Companies Secretary, Chief Financial Officer, Resident Director, Independent Director, Auditors - Appointment - Powers - Duties & Responsibilities. Managing Director - Appointment - Powers - Duties & Responsibilities. Audit Committee, CSR Committee. Company Secretary - Meaning, Types, Qualification, Appointment, Position, Rights, Duties, Liabilities & Removal or dismissal. | | |
| Module No. 4: Corporate Meetings | | 10 |
| Introduction - Corporate meetings: types - Importance - Distinction; Resolutions: Types - Distinction; Requisites of a valid meeting - Notice - Quorum -Proxies - Voting - Registration of resolutions; Role of a company secretary in convening the meetings. | | |
| Module No. 5: Winding Up | | 08 |
| Introduction - Meaning- Modes of Winding up -Consequence of Winding up - Official Liquidator - Role & Responsibilities of Liquidator - Defunct Company - Insolvency Code. | | |
| Skill Development Activities: <ol style="list-style-type: none"> Collect the Companies Act 2013 from the Ministry of Corporate Affairs website and | | |

prepare the highlights of the same.

2. Visit any Registrar of the Companies; find out the procedure involved in the formation of the companies.
3. Visit any Company and discuss with Directors of the same on role and responsibilities and prepare report on the same.
4. Collect the copy of notice of the Meeting and Resolutions, Prepare the dummy copy of Notice and resolutions.
5. Contact any official liquidator of an organisation and discuss the procedure involved on the same and prepare report.
6. Any other activities, which are relevant to the course.

Text Books:

1. S.N Maheshwari, Elements of Corporate Law, HPH.
2. Balchandran, Business Law for Management, HPH
3. Dr. P.N. Reddy and H.R. Appanaiah, Essentials of Company Law and Secretarial Practice, HPH.
4. K. Venkataramana, Corporate Administration, SHBP.
5. N.D. Kapoor: Company Law and Secretarial Practice, Sultan Chand.
6. M.C. Bhandari, Guide to Company Law Procedures, Wadhwa Publication.
7. S.C. Kuchal, Company Law and Secretarial Practice.
8. S.C. Sharm, Business Law, I.K. International Publishers

Note: Latest edition of text books may be used.

| | | |
|---|------------------------------|------------------------------------|
| Name of the Program: Bachelor of Commerce (B.Com.) Course Code: B.Com. 2.3 Name of the Course: Law and Practice of Banking | | |
| Course Credits | No. of Hours per Week | Total No. of Teaching Hours |
| 4 Credits | 4 Hrs | 48 Hrs |
| Pedagogy: Classrooms lecture, Case studies, Group discussion, Seminar & field work etc., | | |
| Course Outcomes: On successful completion of the course, the Students will be able to <ol style="list-style-type: none"> Summarize the relationship between Banker & customer and different types of functions of banker. Analyse the role, functions and duties of paying and collecting banker. Make use of the procedure involved in opening and operating different accounts. Examine the different types of negotiable instrument & their relevance in the present context. Estimate possible developments in the banking sector in the upcoming days. | | |
| Syllabus: | | Hours |
| Module No. 1: Introduction to Banking | | 10 |
| Introduction- Meaning - Need - Importance - Primary, Secondary & Modern functions of banks - Origin of banking- Banker and Customer Relationship (General and special relationship) - Origin and growth of commercial banks in India - Types of Banks in India-Banks' Lending - changing role of commercial banks. RBI: History-Role & Functions. | | |
| Module No. 2: Paying and Collecting Banker | | 10 |
| Paying banker: Introduction - Meaning - Role - Functions - Duties - Precautions and Statutory Protection and rights - Dishonor of Cheques - Grounds of Dishonor - Consequences of wrongful dishonor of Cheques; Collecting Banker: Introduction - Meaning - Legal status of collecting banker - Holder for value -Holder in due course - Duties & Responsibilities - Precautions and Statutory Protection to Collecting Banker. | | |
| Module No. 3: Customers and Account Holders | | 10 |
| Introduction - Types of Customers and Account Holders - Procedure and Practice in opening and operating accounts of different customers: Minors - Joint Account Holders- Partnership Firms - Joint Stock companies - Executors and Trustees - Clubs and Associations and Joint Hindu Undivided Family. | | |
| Module No. 4: Negotiable Instruments | | 10 |
| Introduction - Meaning & Definition - Features - Kinds of Negotiable Instruments: Promissory Notes - Bills of Exchange - Cheques - Crossing of Cheques - Types of Crossing; Endorsements: Introduction - Meaning - Essentials & Kinds of Endorsement - Rules of endorsement. | | |
| Module No. 5: Recent Developments in Banking | | 08 |
| Introduction - New technology in Banking - E-services - Debit and Credit cards - Internet Banking-Electronic Fund Transfer- MICR - RTGS - NEFT -ECS- Small banks-Payment banks-Digital Wallet-Crypto currency- KYC norms - Basel Norms - Mobile banking-E-payments - E-money. Any other recent development in the banking sector. | | |
| Skill Development Activities: <ol style="list-style-type: none"> Refer RBI website and identify the different types of banks operating in India. Visit any Public sector bank & discuss with the branch manager about the role and functions as a paying and collecting banker. | | |

3. Collect and fill dummy account opening forms as different types of customer.
4. Draft specimen of Negotiable instruments: bill of exchange, Promissory Notes and Cheques.
5. Identify and prepare report on pros and cons of recent development in the field of banking sector.
6. Any other activities, which are relevant to the course.

Text Books:

1. Gordon & Natarajan, Banking Theory Law and Practice, HPH, 24th Edition
2. S. P Srivastava (2016), Banking Theory & Practice, Anmol Publications
3. Maheshwari. S.N. (2014), Banking Law and Practice, Kalyani Publishers, 11 edition
4. Shekar. K.C (2013), Banking Theory Law and Practice, Vikas Publication, 21st Edition.
5. Dr. Alice Mani (2015), Banking Law and Operation, SBH.

Note: Latest edition of text books may be used.

| | | |
|---|------------------------------|------------------------------------|
| Name of the Program: Bachelor of Commerce (B.Com) Course Code: B.Com. 2.7 (Open Elective Course) Name of the Course: Financial Environment | | |
| Course Credits | No. of Hours per Week | Total No. of Teaching Hours |
| 4 Credits | 2 Hrs | 24 Hrs |
| Pedagogy: Classrooms lecture, Case studies, Group discussion, Seminar & field work etc., | | |
| Course Outcomes: On successful completion of the course, the Students will be able to <ol style="list-style-type: none"> 1. Understand the fundamentals of Indian Economy and its significance. 2. Evaluate the impact of monetary policy on the stakeholders of the Economy. 3. Assess the impact of fiscal policy on the stakeholders of the Economy. 4. Examine the status of inflation, unemployment and labour market in India 5. Inference the financial sector reforms in India. | | |
| Syllabus: | | Hours |
| Module No. 1: Fundamentals of India Economy | | 05 |
| Introduction - Production & Cost-Demand & Supply-Perfect & Imperfect Competition-Monopoly-National Income Accounting-Business Cycle-Open Economy-Utility theory-GDP-GNP-impact- other Marco financial indicators. | | |
| Module No. 2: Monetary Policy | | 05 |
| Introduction - Meaning-objectives-qualitative & quantitative measures for credit control. Influence of policy rates of RBI: Repo-Reverse repo- Marginal standing facility and Bank rate. Influence of reserve ratios of RBI: CRR-SLR-Exchange rates-lending/deposit rates-design & issues of monetary policy-LAF - RBI Role, functions and its Governance | | |
| Module No. 3: Fiscal Policy | | 05 |
| Introduction - Meanings-objectives- public expenditure-public debt-fiscal & budget deficit-Keynesian approach-fiscal policy tools-fiscal policy effects on employment-supply side approach-design & issues of fiscal policy-fiscal budget- Role of Ministry of Finance in Fiscal Policy. | | |
| Module No. 4: Inflation, Unemployment and Labour market | | 05 |
| Introduction - Inflation: Causes of rising & falling inflation-inflation and interest rates-social costs of inflation; Unemployment - natural rate of unemployment-frictional & wait unemployment. Labour market and its interaction with production system; Phillips curve-the trade-off between inflation and unemployment-sacrifice ratio-role of expectations adaptive and rational | | |
| Module 5: Financial Sector Reforms: | | 04 |
| Introduction - Financial sector reforms - Recommendation & action taken -SARFESI Act-Narasimham Committee I & II- Kelkar Committee- FRBM Act - Basel-BIS-history-need-mission-objectives-Basel norms I, II & III- criticism of Basel norms-Implementations of Basel norms in India- impact of Basel norms on Indian banks. | | |
| Skill Development Activities: <ol style="list-style-type: none"> 1. Collect last ten year GDP rate and examine the same. 2. Collect last two years monetary policy rates of RBI and analyse the impact of the same. | | |

3. Collect last five years fiscal policy of Indian Government and analyse the impact of the same on rural poor.
4. Collect last five year data on inflation, unemployment rate and labour market conditions and critically prepare the report.
5. Identify the recent financial sector reforms in India.
6. Any other activities, which are relevant to the course.

Text Books:

1. V K Puri and S K Mishra, Indian Economy, HPH.
2. Datt and Sundharam's, Indian Economy, S Chand
3. Ramesh Singh, Indian Economy, McGraw Hill education.
4. Khan and Jain, Financial Services, Mcgraw Hill Education, 8th edition
5. RBI working papers
6. Mistry of Finance, GOI of working papers
7. SEBI Guidelines Issued from time to time.

Note: Latest edition of text books may be used.

| | | |
|--|------------------------------|------------------------------------|
| Name of the Program: Bachelor of Commerce (B.Com) Course Code: B.Com.2.7 (Open Elective Course) Name of the Course: Investing in Stock Markets | | |
| Course Credits | No. of Hours per Week | Total No. of Teaching Hours |
| 3 Credits | 3 Hrs | 40 Hrs |
| Pedagogy: Classrooms lecture, Case studies, Group discussion, Seminar & field work etc., | | |
| Course Outcomes: On successful completion of the course, the Students will be able to <ol style="list-style-type: none"> 1. Explain the basics of investing in the stock market, the investment environment as well as risk & return. 2. Analyze Indian securities market; 3. Examine EIC framework and conduct fundamental analysis; 4. Perform technical analysis; 5. Invest in mutual funds market. | | |
| Syllabus: | | Hours |
| Module No. 1: Basics of Investing | | 08 |
| Basics of Investment & Investment Environment. Risk and Return, Avenues of Investment - Equity shares, Preference shares, Bonds & Debentures, Insurance Schemes, Mutual Funds, Index Funds. Indian Security Markets - Primary Market, Secondary Market and Derivative Market. Responsible Investment. | | |
| Module No. 2: Fundamental Analysis | | 08 |
| Top down and bottom up approaches, Analysis of international & domestic economic scenario, Industry analysis, Company analysis (Quality of management, financial analysis: Both Annual and Quarterly, Income statement analysis, position statement analysis including key financial ratios, Cash flow statement analysis, Industry market ratios: PE, PEG, Price over sales, Price over book value, EVA), Understanding Shareholding pattern of the company. | | |
| Module No. 3: Technical Analysis | | 08 |
| Trading rules (credit balance theory, confidence index, filter rules, market breath, advances vs declines and charting (use of historic prices, simple moving average and MACD) basic and advanced interactive charts. Do's& Don'ts of investing in markets. | | |
| Module No. 4: Indian Stock Market | | 08 |
| Market Participants: Stock Broker, Investor, Depositories, Clearing House, Stock Exchanges. Role of stock exchange, Stock exchanges in India- BSE, NSE and MCX. Security Market Indices: Nifty, Sensex and Sectoral indices, Sources of financial information. Trading in securities: Demat trading, types of orders, using brokerage and analyst recommendations | | |
| Module 5: Investing in Mutual Funds | | 08 |
| Concept and background on Mutual Funds: Advantages, Disadvantages of investing in Mutual Funds, Types of Mutual funds- Open ended, close ended, equity, debt, hybrid, index funds and money market funds. Factors affecting choice of mutual funds. CRISIL mutual fund ranking and its usage, calculation and use of Net Asset Value. | | |
| Skill Development Activities: <ol style="list-style-type: none"> 1. Work on the spreadsheet for doing basic calculations in finance. 2. Learners will also practice technical analysis with the help of relevant software. 3. Practice use of Technical charts in predicting price movements through line chart, bar chart, candle and stick chart, etc., moving averages, exponential moving average. 4. Calculate of risk and return of stocks using price history available on NSE website. 5. Prepare equity research report-use of spreadsheets in valuation of securities, fundamental | | |

analysis of securities with the help of qualitative and quantitative data available in respect of companies on various financial websites, etc.

6. Any other activities, which are relevant to the course.

Text Books:

1. Chandra, P. (2017). Investment Analysis and Portfolio Management. New Delhi: Tata McGraw Hill Education.
2. Kevin, S. (2015). Security Analysis and Portfolio Management. Delhi: PHI Learning. Ranganatham,
3. M., & Madhumathi, R. (2012). Security Analysis and Portfolio Management. Uttar Pradesh: Pearson (India) Education.
4. Pandian, P. (2012). Security Analysis and Portfolio Management. New Delhi: Vikas Publishing House.

Note: Latest edition of text books may be used.

| | | |
|---|------------------------------|------------------------------------|
| Name of the Program: Bachelor of Commerce (B.Com) Course Code: B.Com.2.7 (Open Elective Course) Name of the Course: PUBLIC FINANCE | | |
| Course Credits | No. of Hours per Week | Total No. of Teaching Hours |
| 3 Credits | 3 Hrs | 40 Hrs |
| Pedagogy: Classrooms lecture, Case studies, Group discussion, Seminar & field work etc., | | |
| Course Outcomes: On successful completion of the course, the Students will be able to a) Identify the basis of Money and sources of Public Finance b) Identify the stages of business cycles and take appropriate decisions. | | |
| Syllabus: | | Hours |
| Module No. 1: Money | | 08 |
| Meaning, definitions, functions & classification - money and near money. Demand and supply of money: determinants; High – powered money and the money multiplier. | | |
| Module No. 2: Value of money and its application | | 08 |
| Value of Money: meaning and theories - The quantity Theory of money – Fisher’s Theory and the Cambridge Equations, Friedman’s restatement of the quantity theory- Measurement of Value of money: Index Numbers – meaning, types and uses. Inflation: meaning, types, causes, effects and remedies -stagflation. | | |
| Module No. 3: Business Cycles | | 08 |
| Meaning features, phases- causes: Hawtrey’s theory, Hick’s theory and Schumpeter’s Theory – Measures to control business cycles. | | |
| Module No. 4: Public Finance | | 08 |
| Meaning, Difference between public Finance and Private Finance ; Components of public finance principle of maximum social advantage. Public Revenue – Meaning, Sources, Cannons of taxation. Public Expenditure – Meaning and Classification (Heads of Public Expenditure) Public Debt – Meaning Sources types of Public debt and methods of redemption. | | |
| Module 5: Fiscal Policy and Deficit Finance | | 08 |
| Public Budget - Meaning, Objectives, Components and types Fiscal Policy – Meaning, Objectives and Components Role of Fiscal policy in developing economy – Deficit finance. | | |
| Skill Development Activities: <ol style="list-style-type: none"> 1. Acquire basics of money market operations& functioning of the money market through intermediaries. 2. Acquire knowledge about the functioning of the economic system & about economic fluctuations. 3. Gains hand on experience of working of the banking system & the monetary policy. 4. Understand the importance of Inter-National Finance 5. Any other activities, which are relevant to the course. | | |
| Books for reference: <ol style="list-style-type: none"> 1. F. S. Mishkin and S. G. Eakins, Financial Markets and Institutions, Pearson | | |

Education, 6th edition, 2009.

2. F. J. Fabozzi, F. Modigliani, F. J. Jones, M. G. Ferri, Foundations of Financial Markets and Institutions, Pearson Education, 3rd edition, 2009.

3. L. M. Bhole and J. Mahukud, Financial Institutions and Markets, Tata McGraw Hill, 5th edition, 2011.

4. M. Y. Khan, Indian Financial System, Tata McGraw Hill, 7th edition, 2011.

5. N. Jadhav, Monetary Policy, Financial Stability and Central Banking in India, Macmillan, 2006.

6. Musgrave Public Finance theory and Practice, Tata Mc Graw Hill, 5th Edition, 2011.

7. Taylor, 'Public Finance'.

Note: Latest edition of text books may be used.

NEW EDUCATION POLICY INITIATIVES
A
REPORT
ON
CURRICULUM FRAMEWORK FOR FOUR-YEAR
UNDER-GRADUATE PROGRAM IN COMMERCE

{COMMON FRAMEWORK FOR ALL B.COM. AND BBA PROGRAMS}

BY
EXPERT COMMITTEE



KARNATAKA STATE HIGHER EDUCATION COUNCIL
30, Prasanna Kumar Block, Bengaluru Central University Campus,
Y Ramachandra Road, Gandhinagar, Bengaluru, Karnataka - 560009
May, 2022

**Curriculum Framework and Scheme of Teaching &
Evaluation to be introduced from the Academic Year
2021-22 Onwards**

**Based on
NATIONAL EDUCATION POLICY 2020 GUIDELINES**

Four Year Undergraduate Programs

Bachelor of Commerce (B.Com.)

- A. Program Structure**
- B. Course Contents of III and IV Semesters**

A. Program Structure

Scheme of Teaching & Evaluation for B.Com (Basic/Hons) with Commerce as Core subject

| Semester I | | | | | | | | |
|----------------|-------------|---|---------------------|-------------------------------------|-----|-----|-------------|---------|
| Sl. No. | Course Code | Title of the Course | Category of Courses | Teaching Hours per Week (L + T + P) | SEE | CIE | Total Marks | Credits |
| 1 | Lang.1.1 | Language - I | AECC | 3+1+0 | 60 | 40 | 100 | 3 |
| 2 | Lang.1.2 | Language – II | AECC | 3+1+0 | 60 | 40 | 100 | 3 |
| 3 | B.Com.1.1 | Financial Accounting | DSC | 3+0+2 | 60 | 40 | 100 | 4 |
| 4 | B.Com.1.2 | Management Principles and Applications | DSC | 4+0+0 | 60 | 40 | 100 | 4 |
| 5 | B.Com.1.3 | Principles of Marketing | DSC | 4+0+0 | 60 | 40 | 100 | 4 |
| 6 | B.Com.1.4 | Digital Fluency | SEC-SB | 1+0+2 | 60 | 40 | 100 | 2 |
| 7 | B.Com.1.5 | Within the Faculty: * 1. xxxxxxxxxxxxx 2. xxxxxxxxxxxxx | OEC | 3+0+0 | 50 | 50 | 100 | 3 |
| | | Across the Faculty** 3. Accounting for Everyone 4. Financial Literacy | | | | | | |
| Sub –Total (A) | | | | | 410 | 290 | 700 | 23 |

Note :

* Within the Faculty: These Courses (1 & 2) are meant for Commerce Students and shall be taught by Commerce Teachers (Both B.Com & BBA Teachers). The Board of Studies (BOS) can decide the two OECs which are to be offered. A List of OECs has been appended at the end.

** Across the Faculty: These Courses (3 & 4) are meant for Other Department Students and shall be taught by Commerce Teachers (Both B.Com & BBA Teachers)

| Semester II | | | | | | | | |
|----------------|------------|--|---------------------|-------------------------------------|-----|-----|-------------|---------|
| Sl. No. | CourseCode | Title of the Course | Category of Courses | Teaching Hours per Week (L + T + P) | SEE | CIE | Total Marks | Credits |
| 8 | Lang.2.1 | Language - I | AECC | 3+1+0 | 60 | 40 | 100 | 3 |
| 9 | Lang.2.2 | Language – II | AECC | 3+1+0 | 60 | 40 | 100 | 3 |
| 10 | B.Com.2.1 | Advanced Financial Accounting | DSC | 3+0+2 | 60 | 40 | 100 | 4 |
| 11 | B.Com.2.2 | Business Mathematics OR Corporate Administration | DSC | 3+0+2 | 60 | 40 | 100 | 4 |
| 12 | B.Com.2.3 | Law & Practice of Banking | DSC | 4+0+0 | 60 | 40 | 100 | 4 |
| 13 | B.Com.2.4 | Health Wellness/ Social & Emotional Learning | SEC-VB | 1+0+2 | - | 100 | 100 | 2 |
| 14 | B.Com.2.5 | Environmental Studies | AECC | 2+0+0 | 50 | 50 | 100 | 2 |
| 15 | B.Com.2.6 | Within the Faculty: 1. xxxxxxxxxxxx 2. xxxxxxxxxxxx | OEC | 3+0+0 | 50 | 50 | 100 | 3 |
| | | Across the Faculty: 3. Financial Environment 4. Investing in Stock Markets | | | | | | |
| Sub –Total (B) | | | | | 400 | 400 | 800 | 25 |

EXIT OPTION WITH CERTIFICATION – with ability to solve well defined problems

Note :

* Within the Faculty: These Courses (1 & 2) are meant for Commerce Students and shall be taught by Commerce Teachers (Both B.Com & BBA Teachers). The Board of Studies (BOS) can decide the two OECs which are to be offered. A List of OECs has been appended at the end.

** Across the Faculty: These Courses (3 & 4) are meant for Other Department Students and shall be taught by Commerce Teachers (Both B.Com & BBA Teachers)

| Semester III | | | | | | | | |
|----------------|------------|---|---------------------|-------------------------------------|-----|-----|-------------|---------|
| Sl. No. | CourseCode | Title of the Course | Category of Courses | Teaching Hours per Week (L + T + P) | SEE | CIE | Total Marks | Credits |
| 16 | Lang.1.1 | Language - I | AECC | 3+1+0 | 60 | 40 | 100 | 3 |
| 17 | Lang.1.2 | Language – II | AECC | 3+1+0 | 60 | 40 | 100 | 3 |
| 18 | B.Com.3.1 | Corporate Accounting | DSC | 3+0+2 | 60 | 40 | 100 | 4 |
| 19 | B.Com.3.2 | Business Statistics | DSC | 3+0+2 | 60 | 40 | 100 | 4 |
| 20 | B.Com.3.3 | Cost Accounting | DSC | 3+0+2 | 60 | 40 | 100 | 4 |
| 21 | B.Com.3.4 | Artificial Intelligence | SEC | 1+0+2 | 50 | 50 | 100 | 2 |
| 22 | B.Com.3.5 | Advertising Skills/Entrepreneurial Skills | OEC | 3+0+0 | 50 | 50 | 100 | 3 |
| Sub –Total (C) | | | | | 400 | 300 | 700 | 23 |

| Semester IV | | | | | | | | |
|----------------|------------|--|---------------------|-------------------------------------|-----|-----|-------------|---------|
| Sl. No. | CourseCode | Title of the Course | Category of Courses | Teaching Hours per Week (L + T + P) | SEE | CIE | Total Marks | Credits |
| 23 | Lang.1.1 | Language - I | AECC | 3+1+0 | 60 | 40 | 100 | 3 |
| 24 | Lang.1.2 | Language – II | AECC | 3+1+0 | 60 | 40 | 100 | 3 |
| 25 | B.Com.4.1 | Advanced Corporate Accounting | DSC | 3+0+2 | 60 | 40 | 100 | 4 |
| 26 | B.Com.4.2 | Costing Methods & Techniques | DSC | 3+0+2 | 60 | 40 | 100 | 4 |
| 27 | B.Com.4.3 | Business Regulatory Framework | DSC | 4+0+0 | 60 | 40 | 100 | 4 |
| 28 | B.Com.4.4 | Constitution of India | AECC | 2+0+0 | 50 | 50 | 100 | 2 |
| 29 | B.Com.4.5 | Sports/NCC/NSS/others (if any) | SEC-VB | 1+0+2 | - | 100 | 100 | 2 |
| 30 | B.Com.4.6 | Business Ethics / Corporate Governance | OEC | 3+0+0 | 50 | 50 | 100 | 3 |
| Sub –Total (D) | | | | | 400 | 400 | 800 | 25 |

EXIT OPTION WITH DIPLOMA – Ability to solve broadly defined problems.

Semester V

| Sl. No. | Course Code | Title of the Course | Category of Courses | Teaching Hours per Week (L + T + P) | SEE | CIE | Total Marks | Credits |
|----------------|--------------------|---|---------------------|-------------------------------------|-----|-----|-------------|---------|
| 31 | B.Com.5.1 | Financial Management | DSC | 3+0+2 | 60 | 40 | 100 | 4 |
| 32 | B.Com.5.2 | Income Tax Law and Practice-I | DSC | 3+0+2 | 60 | 40 | 100 | 4 |
| 33 | B.Com.5.3 | Auditing and Assurance | DSC | 4+0+0 | 60 | 40 | 100 | 4 |
| 34 | B.Com.5.4 Elective | One Course from the Selected Elective Group | DSE - 1 | 3+1+0 | 60 | 40 | 100 | 3 |
| 35 | B.Com.5.6 Elective | GST- Law & Practice | Vocational - 1 | 2+0+2 | 60 | 40 | 100 | 3 |
| 36 | B.Com.5.7 | Cyber Security/Ethics & Self Awareness | SEC - VB | 1+0+2 | 50 | 50 | 100 | 2 |
| Sub –Total (E) | | | | | 350 | 250 | 600 | 20 |

Semester VI

| Sl. No. | Course Code | Title of the Course | Category of Courses | Teaching Hours per Week (L + T + P) | SEE | CIE | Total Marks | Credits |
|----------------------|--------------------|---|---------------------|-------------------------------------|------|------|-------------|---------|
| 37 | B.Com.6.1 | Management Accounting | DSC | 3+0+2 | 60 | 40 | 100 | 4 |
| 38 | B.Com.6.2 | Income Tax Law and Practice-II | DSC | 3+0+2 | 60 | 40 | 100 | 4 |
| 39 | B.Com.6.3 Elective | Three courses from the Selected Elective Group | DSE – 2 | 3+1+0 | 60 | 40 | 100 | 3 |
| 40 | B.Com.6.4 Elective | | DSE – 3 | 3+1+0 | 60 | 40 | 100 | 3 |
| 41 | B.Com.6.5 Elective | | DSE – 4 | 3+1+0 | 60 | 40 | 100 | 3 |
| 42 | B.Com.6.6 | Basics of Spread Sheet Modelling OR Report on Study of Startups and Innovative Business Ideas | Vocational-2 | 2+0+2 | 60 | 40 | 100 | 3 |
| 43 | B.Com.6.7 | Professional Communication | SEC - SB | 2+0+0 | 50 | 50 | 100 | 2 |
| Sub –Total (F) | | | | | 410 | 290 | 700 | 22 |
| Grand Total - Degree | | | | | 2310 | 1930 | 4300 | 138 |

EXIT OPTION WITH BACHELOR DEGREE -Ability to solve complex problems that are ill-structured requiring multi-disciplinary skills to solve them.

| Semester VII | | | | | | | | |
|----------------|-------------|---|---------------------|-------------------------------------|-----|-----|-------------|---------|
| Sl. No. | Course Code | Title of the Course | Category of Courses | Teaching Hours per Week (L + T + P) | SEE | CIE | Total Marks | Credits |
| 44 | B.Com.7.1 | International Business | DSC | 4+0+0 | 60 | 40 | 100 | 4 |
| 45 | B.Com.7.2 | Advanced Business Statistics | DSC | 3+0+2 | 60 | 40 | 100 | 4 |
| 46 | B.Com.7.3 | Advanced Financial Management | DSC | 3+0+2 | 60 | 40 | 100 | 4 |
| 47 | B.Com.7.4 | One Course from the Selected Elective Group | DSE - 5 | 3+1+0 | 60 | 40 | 100 | 3 |
| 48 | B.Com.7.5 | ERP Applications | Vocational-3 | 2+0+2 | 60 | 40 | 100 | 3 |
| 49 | B.Com.7.6 | Research Methodology | - | 2+0+2 | 60 | 40 | 100 | 3 |
| Sub –Total (G) | | | | | 360 | 240 | 600 | 21 |

| Semester VIII | | | | | | | | |
|----------------------|-------------|--|---------------------|-------------------------------------|------------|------------|-------------|---------|
| Sl. No. | Course Code | Title of the Course | Category of Courses | Teaching Hours per Week (L + T + P) | SEE | CIE | Total Marks | Credits |
| 50 | B.Com.8.1 | Financial Reporting-IND.AS | DSC | 3+0+2 | 60 | 40 | 100 | 4 |
| 51 | B.Com.8.2 | Strategic Financial Management | DSC | 4+0+0 | 60 | 40 | 100 | 4 |
| 52 | B.Com.8.3 | Business Analytics OR Data Analysis & Decision Sciences | DSC | 3+0+2 | 60 | 40 | 100 | 4 |
| 53 | B.Com.8.4 | Managing Digital Platforms | Vocational-4 | 2+0+2 | 60 | 40 | 100 | 3 |
| 54 | B.Com.8.5 | Research Projects/Internship with Viva – voce | - | - | 50 | 50 | 100 | 6 |
| | | OR | DSE-6 | 3+1+0 | 60* | 40* | 100* | 3* |
| | | Two Courses from the Selected Elective Group 8.5 (A) & 8.5 (B) | DSE-7 | 3+1+0 | 60* | 40* | 100* | 3* |
| Sub –Total (H) | | | | | 290/360* | 210/240* | 500/600* | 21/21* |
| Grand Total – Honors | | | | | 3020/3090* | 2380/2410* | 5400/5500* | 180 |

* Students who do not opt Research Project / Internship shall take two elective courses such as 8.5 (A) & 8.5 (B).

Sub Total (H) and Grand Totals Honors vary accordingly.

BACHELOR DEGREE WITH HONORS – Experience of workplace problem solving in the form of internship or research experience preparing for higher education or entrepreneurship experience.

Notes:

- One Hour of Lecture is equal to 1 Credit.
- One Hour of Tutorial is equal to 1 Credit (Except Languages).
- Two Hours of Practical is equal to 1 Credit

Acronyms Expanded

- AECC : Ability Enhancement Compulsory Course
- DSC © : Discipline Specific Core (Course)
- SEC-SB/VB : Skill Enhancement Course-Skill Based/Value Based
- OEC : Open Elective Course
- DSE : Discipline Specific Elective
- SEE : Semester End Examination

- **CIE** : Continuous Internal Evaluation
 ➤ **L+T+P** : Lecture+Tutorial+Practical (s)

Note: Practical Classes may be conducted in the Business Lab or in Computer Lab or in Class room depending on the requirement. One batch of students should not exceed half (i.e., 50 or less than 50 students) of the number of students in each class/section. 2 Hours of Practical Class is equal to 1 Hour of Teaching, however, whenever it is conducted for the entire class (i.e., more than 50 students) 2 Hours of Practical Class is equal to 2 Hours of Teaching.

ELECTIVE GROUPS AND COURSES:

| Discipline Specific Electives – V Semester | | | | | | |
|--|------------------|------------------------------------|-----------------------|-------------------|-----------------------------|---------------------|
| Sl. No | Accounting | Finance | Banking & Insurance | Marketing | Human Resources | IT |
| 1 | Ind. AS and IFRS | Financial Markets & Intermediaries | Indian Banking System | Retail Management | Human Resources Development | Financial Analytics |

| Discipline Specific Electives – VI Semester | | | | | | |
|---|--|-------------------------------------|------------------------------------|--|----------------------------------|-----------------------------|
| 1 | e-Business & Accounting | Investment Management | Banking Innovations & Technology | Customer Relationship Marketing | Cultural Diversity at Work Place | HR Analytics |
| 2 | Accounting for Services Sector | Global Financial System & Practices | Principles & Practice of Insurance | Digital Marketing | New Age Leadership Skills | Marketing Analytics |
| 3 | Accounting for Government and Local Bodies | Risk Management | Insurance Law and Regulations | Consumer Behavior & Marketing Research | Labour Laws & Practice | ICT Application in Business |

| Discipline Specific Electives – VII Semester | | | | | | |
|--|---------------------|-----------------------|-----------------------------|-------------------------------------|---------------|------------|
| 1 | Forensic Accounting | Corporate Structuring | Banking Products & Services | Logistics & Supply Chain Management | Strategic HRM | DBMS & SQL |

| Discipline Specific Electives – VIII Semester | | | | | | |
|---|-------------------------------|----------------------------------|---------------------------------|--------------------|------------------------------------|--|
| 1 | Innovations in Accounting | Corporate Valuation | e-Banking | E - Commerce | International HRM | Web & Social Intelligence |
| 2 | Accounting Information System | Analysis of Financial Statements | Insurance Planning & Management | Services Marketing | Employee Welfare & Social Security | Artificial Intelligence & Machine Learning in Business |

NOTE: Student shall continue with the same elective group in V and VI semesters, however, he/she may change the elective group in VII semester, but shall continue in the same group in VIII semester.

Scheme of Teaching and Evaluation of III and IV Semester

| Semester III | | | | | | | | |
|-----------------------|------------|--|--------------------|-------------------------------------|------------|------------|-------------|-----------|
| Sl. No. | CourseCode | Title of the Course | Categoryof Courses | Teaching Hours per Week (L + T + P) | SEE | CIE | Total Marks | Credits |
| 16 | Lang.1.1 | Language - I | AECC | 3+1+0 | 60 | 40 | 100 | 3 |
| 17 | Lang.1.2 | Language - II | AECC | 3+1+0 | 60 | 40 | 100 | 3 |
| 18 | B.Com.3.1 | Corporate Accounting | DSC | 3+0+2 | 60 | 40 | 100 | 4 |
| 19 | B.Com.3.2 | Business Statistics | DSC | 3+0+2 | 60 | 40 | 100 | 4 |
| 20 | B.Com.3.3 | Cost Accounting | DSC | 3+0+2 | 60 | 40 | 100 | 4 |
| 21 | B.Com.3.4 | Artificial Intelligence | SEC | 1+0+2 | 50 | 50 | 100 | 2 |
| 22 | B.Com.3.5 | Advertising Skills/ Entrepreneurial Skills | OEC | 3+0+0 | 50 | 50 | 100 | 3 |
| Sub -Total (C) | | | | | 400 | 300 | 700 | 23 |

| Semester IV | | | | | | | | |
|-----------------------|------------|--|--------------------|-------------------------------------|------------|------------|-------------|-----------|
| Sl. No. | CourseCode | Title of the Course | Categoryof Courses | Teaching Hours per Week (L + T + P) | SEE | CIE | Total Marks | Credits |
| 23 | Lang.1.1 | Language - I | AECC | 3+1+0 | 60 | 40 | 100 | 3 |
| 24 | Lang.1.2 | Language - II | AECC | 3+1+0 | 60 | 40 | 100 | 3 |
| 25 | B.Com.4.1 | Advanced Corporate Accounting | DSC | 3+0+2 | 60 | 40 | 100 | 4 |
| 26 | B.Com.4.2 | Costing Methods & Techniques | DSC | 3+0+2 | 60 | 40 | 100 | 4 |
| 27 | B.Com.4.3 | Business Regulatory Framework | DSC | 4+0+0 | 60 | 40 | 100 | 4 |
| 28 | B.Com.4.4 | Constitution of India | AECC | 2+0+0 | 50 | 50 | 100 | 2 |
| 29 | B.Com.4.5 | Sports/NCC/NSS/others (if any) | SEC-VB | 1+0+2 | - | 100 | 100 | 2 |
| 30 | B.Com.4.6 | Business Ethics / Corporate Governance | OEC | 3+0+0 | 50 | 50 | 100 | 3 |
| Sub -Total (D) | | | | | 400 | 400 | 800 | 25 |

EXIT OPTION WITH DIPLOMA - Ability to solve broadly defined problems.

Curriculum of III Semester Courses

3.1 Corporate Accounting

3.2 Business Statistics

3.3 Cost Accounting

3.4 Artificial Intelligence (Curriculum will be given by KSHEC)

3.5 1. Advertising Skills

or

2. Entrepreneurial Skills

| | | |
|---|------------------------------|------------------------------------|
| Name of the Program: Bachelor of Commerce (B.Com.) Course Code: B.Com.3.1 Name of the Course: Corporate Accounting | | |
| Course Credits | No. of Hours per Week | Total No. of Teaching Hours |
| 4 Credits | 3+2 Hrs | 56 Hrs |
| Pedagogy: Classroom lectures, Case studies, Tutorial Classes, Group discussion, Seminar & field work etc., | | |
| Course Outcomes: On successful completion of the course, the Students will be able to <ul style="list-style-type: none"> a) Understand the treatment of underwriting of shares. b) Comprehend the computation of profit prior to incorporation. c) Know the valuation of intangible assets. d) Know the valuation of shares. e) Prepare the financial statements of companies as per companies act, 2013. | | |
| Syllabus: | | Hours |
| Module No. 1: Underwriting of Shares | | 10 |
| Introduction -Meaning of Underwriting – SEBI regulations regarding underwriting; Underwriting commission. Underwriter – functions - Advantages of Underwriting, Types of underwriting - Marked and Unmarked Applications –Determination of Liability in respect of underwriting contract – when fully underwritten and partially underwritten – with and without firm underwriting problem. | | |
| Module No. 2: Profit Prior to Incorporation | | 10 |
| Introduction - Meaning – calculation of sales ratio – time ratio – weighted ratio – treatment of capital and revenue expenditure – Ascertainment of pre-incorporation and post-incorporation profits by preparing statement of Profit and Loss and Balance Sheet as per schedule III of companies Act, 2013. | | |
| Module No. 3 Valuation of Intangible Assets | | 10 |
| Introduction - Valuation of Goodwill –factors influencing goodwill, circumstances of valuation of goodwill- Methods of Valuation of Goodwill: Average Profit Method, Capitalization of average Profit Method, Super Profit Method, Capitalization of Super Profit Method, and Annuity Method-Problems. Brand valuation and Intellectual Property Rights (IPR). | | |
| Module No. 4: Valuation of Shares | | 10 |
| Introduction - Meaning – Need for Valuation – Factors Affecting Valuation – Methods of Valuation: Intrinsic Value Method, Yield Method, Earning Capacity Method, Fair Value of shares. Rights Issue and Valuation of Rights Issue, Valuation of Warrants. | | |
| Module 5: Financial Statements of Companies | | 16 |
| Statutory Provisions regarding preparation of financial statements of companies as per schedule III of companies act,2013 and IND AS-1 – Treatment of Special Items – Tax deducted at source – Advance payment of Tax – Provision for Tax – Depreciation – Interest on debentures – Dividends – Rules regarding payment of dividends – Transfer to Reserves – Preparation of Statement of profit and loss and Balance Sheet. | | |

Skill Development Activities:

1. Compile the list of Indian companies which have issued shares through IPO / FPO in the current financial year.
2. Determine Underwriters' Liability in case of an IPO, with imaginary figures. • Present the format of 'Statement of Profit and Loss', 'Balance Sheet' and 'Statement of Changes in Equity', with imaginary figures
3. Collect financial statement of a company and calculate intrinsic value of an equity share.
4. Collect annual report of a Company and List out its assets and Liabilities.
5. Collection of latest financial statements of a company and find out the intrinsic value of shares
6. Collect the annual reports of company and calculate the value of goodwill under different methods
7. Any other activities, which are relevant to the course.

Text Books:

1. J.R. Monga, Fundamentals of Corporate Accounting. Mayur Paper Backs, New Delhi.
2. M.C. Shukla, T.S. Grewal, and S.C. Gupta. Advanced Accounts. Vol.-II. S. Chand & Co., New Delhi.
3. S.N. Maheshwari, and S. K. Maheshwari. Corporate Accounting. Vikas Publishing House, New Delhi.
4. Ashok Sehgal, Fundamentals of Corporate Accounting. Taxman Publication, New Delhi.
5. V.K. Goyal and Ruchi Goyal, Corporate Accounting. PHI Learning.
6. Jain, S.P. and K.L. Narang. Corporate Accounting. Kalyani Publishers, New Delhi.
7. Bhushan Kumar Goyal, Fundamentals of Corporate Accounting, International Book House
8. P. C. Tulsian and Bharat Tulsian, Corporate Accounting, S.Chand
9. Amitabha Mukherjee, Mohammed Hanif, Corporate Accounting, McGraw Hill Education
10. Arulanandam & Raman ; Corporate Accounting -II
11. Madegowda J - Advanced corporate accounting, HPH
12. Soundarajan. A & K. Venkataramana, Corporate Accounting, VBH.
13. S. P. Jain and K. L. Narang - Corporate Accounting
14. S. Bhat- Corporate Accounting.

Note: Latest edition of text books may be used.

| | | |
|--|------------------------------|------------------------------------|
| Name of the Program: Bachelor of Commerce (B.Com.) Course Code: B.Com. 3.2 Name of the Course: Business Statistics | | |
| Course Credits | No. of Hours per Week | Total No. of Teaching Hours |
| 4 Credits | 3+2 Hrs | 56 Hrs |
| Pedagogy: Classroom lectures, Case studies, Tutorial Classes, Group discussion, Seminar & field work etc., | | |
| Course Outcomes: On successful completion of the course, the Students will be able to <ul style="list-style-type: none"> a. Familiarizes statistical data and descriptive statistics for business decision-making. b. Comprehend the measures of variation and measures of skewness. c. Demonstrate the use of probability and probability distributions in business. d. Validate the application of correlation and regression in business decisions. e. Show the use of index numbers in business. | | |
| Syllabus: | | Hours |
| Module No. 1: Statistical Data and Descriptive statistics. | | 14 |
| Nature and Classification of data: Univariate, bivariate and multivariate data; Measures of Central Tendency: Mathematical averages including arithmetic mean, Properties and applications. Positional Averages -Mode and Median (including graphic determination). | | |
| Module No. 2: Measures of Variation: and Skewness | | 12 |
| Measures of Variation: absolute and relative. Range, quartile deviation, mean deviation, standard deviation, and their coefficients, Properties of standard deviation/variance. Skewness: Meaning, Measurement using Karl Pearson and Bowley's measures; concept of Kurtosis. | | |
| Module No. 3: Probability Distributions | | 10 |
| Theory of Probability. Approaches to the calculation of probability; Calculation of event Probabilities. Addition and multiplication laws of probability (Proof not required); Conditional probability and Bayes' Theorem (Proof not required)- Expectation and variance of a random variable - Probability distributions - Binomial distribution: Probability distribution function, Constants, Shape, Fitting of binomial distribution - Poisson distribution: Probability function, (including Poisson approximation to binomial distribution), Constants, Fitting of Poisson distribution - Normal distribution: Probability distribution function, Properties of normal curve, Simple problems. | | |
| Module No. 4: Correlation and Regression Analysis | | 12 |
| Correlation Analysis: Meaning of Correlation: - types of correlation- Positive and negative correlation-simple, partial, and multiple correlation. linear and Non-linear correlation and Scatter diagram, Pearson's co-efficient of Correlation; Correlation and | | |

Probable error; Spearman's Rank Correlation co-efficient. -problems.

Regression Analysis: meaning and definition- regression lines, Regression equations and estimation; Properties of regression coefficients; Relationship between Correlation and Regression coefficients- problems.

Module 5: Index Numbers

8

Meaning and uses of index numbers; Construction of index numbers: Fisher's ideal index number with Time Reversal and Factor Reversal Tests. Construction of consumer price indices Using Aggregative Expenditure method and Family Budget method.

Skill Development Activities:

1. Application of MS Excel Functions in statistical decision making and student should submit output of the same.
2. Collect the age statistics of 10 new married couples calculate Correlation coefficient.
3. Recall the use of probability theory in business.
4. Identify the applicability of correlation and regression in business decision making.
5. Construct consumer price indices with imaginary figures.
6. Any other activities, which are relevant to the course.

Text Books:

1. Gupta, S.P., and Archana Agarwal. Business Statistics, Sultan Chand and Sons, New Delhi.
2. Vohra N. D., Business Statistics, McGraw Hill Education.
3. Gupta, S.C. Fundamentals of Statistics. Himalaya Publishing House.
4. Anderson, Sweeney, and Williams, Statistics for Students of Economics and Business, Cengage Learning.
5. CB Gupta
6. DN Elhance Fundamentals of statistics
7. Sen Chetty and Kapoor mathematical statistics

Note: Latest edition of text books may be used.

| | | |
|--|------------------------------|------------------------------------|
| Name of the Program: Bachelor of Commerce (B.Com.) Course Code: B.Com. 3.3 Name of the Course: Cost Accounting | | |
| Course Credits | No. of Hours per Week | Total No. of Teaching Hours |
| 4 Credits | 3+2 Hrs | 56 Hrs |
| Pedagogy: Classrooms lecture, Case studies, Tutorial classes, Group discussion, Seminar & field work etc., | | |
| Course Outcomes: On successful completion of the course, the students will be able to <ul style="list-style-type: none"> a) Understand concepts of cost accounting & Methods of Costing. b) Outline the Procedure and documentations involved in procurement of materials& compute the valuation of Inventory. c) Make use of payroll procedures & compute idle and over time. d) Discuss the methods of allocation, apportionment & absorption of overheads. e) Prepare cost sheet & discuss cost allocation under ABC. | | |
| Syllabus: | | Hours |
| Module No. 1: Introduction to Cost Accounting | | 12 |
| Introduction- Meaning and definition- Objectives, Importance and Uses of Cost Accounting, Difference between Cost Accounting and Financial Accounting; Various Elements of Cost and Classification of Cost; Cost object, Cost unit, Cost driver, cost centre; Cost reduction and Cost control; Methods and Techniques of Costing (Meanings Only); Use of IT in Cost Accounting; Limitations of Cost Accounting; Cost Sheet: Meaning and Cost heads in a Cost Sheet, Presentation of Cost Information in Cost Sheet . Problems on Cost Sheet, Tenders and Quotations. | | |
| Module No. 2: Material Cost | | 12 |
| Materials: Meaning, Importance and Types of Materials – Direct and Indirect Material Materials material control. - Inventory control Technique of inventory control, problems on level setting and EOQ. Procurement- Procedure for procurement of materials and documentation involved in materials accounting – Material Storage: Duties of Store keeper, pricing of material issues, preparation of Stores Ledger Account – FIFO, LIFO, Simple Average Price and Weighted Average Price Methods – Problems. | | |
| Module No. 3: Employee Cost | | 10 |
| Introduction – Employee Cost – types of labour cost -Labour Cost Control – time keeping and time booking and Payroll Procedure -Preparation of Payroll: Idle Time Causes and Treatment of Normal and Abnormal Idle time, Over Time Causes and Treatment -Labour Turnover- Meaning, Reasons and Effects of Labour turnover. Methods of Wage Payment: Time rate system and piece rate system, and the Incentive schemes- Halsey plan, Rowan plan and Taylor differential piece rate system-problems. | | |
| Module No. 4: Overheads Cost | | 12 |

Introduction- Meaning and Classification of Overheads; Accounting and Control of Manufacturing Overheads: Estimation and Collection, Cost Allocation, Apportionment, Re-apportionment and Absorption of Manufacturing Overheads; Problems on Primary and Secondary overheads distribution using Reciprocal Service Methods (Repeated Distribution Method and Simultaneous Equation Method); Absorption of Overheads: Meaning and Methods of Absorption of Overheads; Problems on Machine Hour Rate.

Module No. 5: Reconciliation of Cost and Financial Accounts

10

Introduction – meaning of reconciliation, Reasons for differences in Profits under Financial and Cost Accounts; Procedure for Reconciliation – Ascertainment of Profits as per Financial Accounts and Cost Accounts and Reconciliation of Profits of both sets of Accounts – Preparation of Reconciliation Statement – Problems.

Skill Developments Activities:

1. Visit any Manufacturing entity, collect the method of inventory valuation adopted & procedure involved in procuring inventory.
2. Draw the format of five documents used for material accounting
3. Prepare dummy Payroll with imaginary figures.
4. Visit any large-scale organization, identify the techniques used for controlling administrative, Selling & distribution overheads.
5. Visit any manufacturing entity and collect the cost data and prepare the cost sheet.
6. Any other activities, which are relevant to the course.

Text Books:

1. Charles T. Horngren, Srikant M. Datar, Madhav V. Rajan, Cost Accounting: A Managerial Emphasis, Pearson Education.
2. Jawahar Lal, Cost Accounting., McGraw Hill Education
3. Madegowda J, Cost Accounting, HPH.
4. Rajiv Goel, Cost Accounting, International Book House
5. Jain, S.P. and K.L. Narang. Cost Accounting: Principles and Methods. Kalyani Publishers
6. Arora, M.N. Cost Accounting – Principles and Practice, Vikas Publishing House, New Delhi.
7. Maheshwari, S.N. and S.N. Mittal. Cost Accounting: Theory and Problems. Shri Mahavir Book Depot, New Delhi.
8. Iyengar, S.P. Cost Accounting, Sultan Chand & Sons
9. Mariyappa B Cost Accounting, HPH

Note: Latest edition of text books may be used.

3.4 Curriculum of Artificial Intelligence will be given by KSHEC

| | | |
|--|------------------------------|------------------------------------|
| Name of the Program: Bachelor of Commerce (B.Com.) Course Code: B.Com. 3.5 (OEC) Name of the Course: Advertising Skills | | |
| Course Credits | No. of Hours per Week | Total No. of Teaching Hours |
| 3 Credits | 3 Hrs | 42 Hrs |
| Pedagogy: Classrooms lecture, Case studies, Group discussion & Seminar etc., | | |
| Course Outcomes: On successful completion of the course, the students will be able to <ul style="list-style-type: none"> a. Familiarize with advertising concepts. b. Able identify effective media choice for advertising. c. Develop ads for different media. d. Measure the advertising effectiveness. e. Analyze the role of advertising agency. | | |
| Syllabus: | | Hours |
| Module No. 1: Introduction | | 10 |
| Communication Process; Advertising as a tool of communication; Meaning, nature and importance of advertising; Types of advertising; Advertising objectives. Audienceanalysis; Setting of advertising budget: Determinants and major methods. | | |
| Module No. 2: Media Decisions | | 07 |
| Major media types - their characteristics, internet as an advertising media, merits and demerits; Factors influencing media choice; media selection, media scheduling, Advertising through the Internet-media devices. | | |
| Module No. 3: Message Development | | 08 |
| Advertising appeals, Advertising copy and elements, Preparing ads for different media | | |
| Module No. 4: Measuring Advertising Effectiveness | | 10 |
| Evaluating communication and sales effects; Pre- and Post-testing techniques | | |
| Module No. 5: Advertising Agency | | 07 |
| a) Advertising Agency: Role, types and selection of advertising agency. b) Social, ethical and legal aspects of advertising in India. | | |
| Skill Development Activities: <ul style="list-style-type: none"> 1. Analyze the audience feedback on advertisement of FMCG. 2. List out any ten products/services advertised through internet. 3. Design any two ads for print media. 4. Examine the legal aspects of advertising in India and submit the report. 5. Any other activities, which are relevant to the course. | | |

Text Books:

1. George E Belch, Michael A Belch, Keyoor Purani, Advertising and Promotion .An Integrated Marketing Communications Perspective (SIE), McGraw Hill Education
2. S. Wats Dunn, and Arnold M. Barban. Advertising: It's Role in Marketing. Dryden Press
3. Burnett, Wells, and Moriatty. Advertising: Principles and Practice. 5th ed. Prentice Hall of India, New Delhi.
4. Batra, Myers and Aakers. Advertising Management. PHI Learning.
5. Terence A. Shimp. Advertising and Promotion: An IMC Approach. Cengage Learning.
6. Sharma, Kavita. Advertising: Planning and Decision Making, Taxmann Publications
7. Jaishree Jethwaney and Shruti Jain, Advertising Management, Oxford University Press, 2012
8. Chunawala and Sethia, Advertising, Himalaya Publishing House
9. Ruchi Gupta, Advertising, S. Chand & Co.
10. O'Guinn, Advertising and Promotion: An Integrated Brand Approach, Cengage Learning

Note: Latest edition of text books may be used.

| | | |
|--|------------------------------|------------------------------------|
| Name of the Program: Bachelor of Commerce (B.Com.) Course Code: B.Com. 3.5 (OEC) Name of the Course: Entrepreneurship Skills | | |
| Course Credits | No. of Hours per Week | Total No. of Teaching Hours |
| 3 Credits | 3 Hrs | 42 Hrs |
| Pedagogy: Classrooms lecture, Case studies, Group discussion & Seminar etc., | | |
| Course Outcomes: On successful completion of the course, the Students will be able to <ol style="list-style-type: none"> Discover their strengths and weaknesses in developing the entrepreneurial mind-set. Identify the different Government Institutions/Schemes available for promoting Entrepreneurs. Understand the various aspects to set-up an Enterprises. Familiarise Mechanism of Monitoring and maintaining an Enterprises. Know the various features for successful/unsuccessful entrepreneurs. | | |
| Syllabus: | | Hours |
| Module No. 1: Introduction | | 10 |
| Need of becoming entrepreneur- ways to become a good entrepreneur-Enabling environment available to become an entrepreneur. Self-discovery, Idea Generation-Idea Evaluation-Feasibility analysis- Finding team-Preparation of business model. | | |
| Module No. 2: Promoting Entrepreneur | | 08 |
| Introduction-Different Government institutions/schemes promoting entrepreneurs: Gramin banks, PMMY-MUDRA Loan, DIC, SIDA, SISI, NSIC, and SIDO, etc., | | |
| Module No. 3: Enterprise Set-up | | 08 |
| Introduction – Ways to set up an enterprise and different aspects involved: legal compliances, marketing aspect, budgeting etc., | | |
| Module No. 4: Monitoring and Maintaining an Enterprise | | 10 |
| Introduction – Day to day monitoring mechanism for marinating an enterprise-Different Government Schemes supporting entrepreneurship. | | |
| Module No. 5: Caselets Discussion | | 06 |
| Examples of successful and unsuccessful entrepreneurship of MUDRA Loan, Graminbanks, SISI and NSIC etc., | | |
| Skill Development Activities: <ol style="list-style-type: none"> List out the discovery and evaluation of viable business ideas for new venturecreation. Practice critical talents and traits required for entrepreneurs such as problemsolving, creativity, communication, business math, sales, and | | |

negotiation

3. List out practical issues in setting-up of different enterprises.
4. Analyze the impact of various Government schemes in promotion of entrepreneurs.
5. Any other activities, which are relevant to the course.

Text Books:

1. Entrepreneurship - Starting, Developing, and Management a new Enterprise -Hisrich and -Peters-Irwin
2. Fayolle A (2007) Entrepreneurship and new value creation. Cambridge, CambridgeUniversity Press
3. Hougard S. (2005) The business idea. Berlin, Springer
4. Lowe R & S Mariott (2006) Enterprise: Entrepreneurship & Innovation. Burlington, Butterworth Heinemann

Note: Latest edition of text books may be used.

Curriculum of IV Semester Courses

- 4.1 Advanced Corporate Accounting
- 4.2 Costing Methods & Techniques
- 4.3 Business Regulatory Framework
- 4.4 Constitution of India (curriculum will be given by KSHEC)
- 4.5 Sports/NCC/NSS/Others (if any)
- 4.6 1. Business Ethic
Or
2. Corporate Governance

| | | |
|---|------------------------------|------------------------------------|
| Name of the Program: Bachelor of Commerce (B.Com.) Course Code: B.Com. 4.1 Name of the Course: Advanced Corporate Accounting | | |
| Course Credits | No. of Hours per Week | Total No. of Teaching Hours |
| 4 Credits | 3+2 Hrs | 56 Hrs |
| Pedagogy: Classroom lectures, Case studies, Group discussion & Seminar etc., | | |
| Course Outcomes: On successful completion of the course, the Students will be able to a) Know the procedure of redemption of preference shares. b) Comprehend the different methods of Mergers and Acquisition of Companies c) Understand the process of internal reconstruction. d) Prepare the liquidators final statement of accounts. e) Understand the recent developments in accounting and accounting standards. | | |
| Syllabus: | | Hours |
| Module No. 1: Redemption of Preference Shares | | 10 |
| Meaning – legal provisions – treatment regarding premium on redemption – creation of Capital Redemption Reserve Account– Fresh issue of shares – Arranging for cash balance for the purpose of redemption – minimum number of shares to be issued for redemption – issue of bonus shares – preparation of Balance sheet (Schedule III to Companies Act 2013) after redemption. | | |
| Module No. 2: Mergers and Acquisition of Companies | | 16 |
| Meaning of Amalgamation and Acquisition – Types of Amalgamation – Amalgamation in the nature of Merger – Amalgamation in the nature of Purchase – Methods of Calculation of Purchase Consideration (Ind AS 103), Net asset Method - Net Payment Method, Accounting for Amalgamation (Problems on pooling of interest method and purchase method) – Journal Entries and Ledger Accounts in the Books of Transferor Company and Journal Entries in the books of Transferee Company – Preparation of Balance Sheet after Merger. (Schedule III to Companies Act 2013). | | |
| Module No. 3: Internal Reconstruction of Companies | | 10 |
| Meaning of Capital Reduction; Objectives of Capital Reduction; Provisions for Reduction of Share Capital under Companies Act, 2013. Forms of Reduction. Accounting for Capital Reduction. Problems on passing Journal Entries, preparation of Capital Reduction Account and Balance sheet after reduction (Schedule III to Companies Act 2013). | | |
| Module No. 4: Liquidation of Companies | | 12 |
| Meaning of Liquidation, Modes of Winding up – Compulsory Winding up, Voluntary Winding up and winding up subject to Supervision by Court. Order of payments in the event of Liquidation. Liquidator's Statement of Account. Liquidator's remuneration. Problems on preparation of Liquidator's Statement of Account. | | |
| Module No. 5: Recent Developments in Accounting and Accounting standards. | | 08 |

Human Resource Accounting – Environmental Accounting Discloser as per Global Reporting Initiative (GRI) Reporting of variables – Social Responsibility Accounting, Indian Accounting Standards- Meaning- objectives-Significance of Accounting standards in India- Process of setting Accounting Standards in India- List of Indian accounting standards. (IND AS).

Skill Development Activities:

1. List out legal provisions in respect of Redemption of Preference shares.
2. Calculation of Purchase consideration with imaginary figures.
3. List any five cases of amalgamation in the nature of merger or acquisition of JointStock Companies.
4. List out legal provisions in respect of internal reconstruction.
5. List out any five Indian Accounting Standards.
6. Any other activities, which are relevant to the course.

Text Books:

1. Arulanandam & Raman ; Corporate Accounting-II, HPH
2. Anil Kumar.S Rajesh Kumar.V and Mariyappa.B Advanced Corporate Accounting, HPH
3. Dr. Venkataraman. R – Advanced Corporate Accounting
4. S.N. Maheswari , Financial Accounting, Vikas publishing
5. Soundarajan A & K. Venkataramana, Advanced Corporate Accounting, SHBP.
6. RL Gupta, Advanced Accountancy, Sultan Chand
7. K.K Verma – Corporate Accounting.
8. Jain and Narang, Corporate Accounting.
9. Tulsian, Advanced Accounting,
10. Shukla and Grewal – Advanced Accountancy, Sultan Chand
11. Srinivas Putty, Advanced Corporate Accounting, HPH.

Note: Latest edition of text books may be used.

| | | |
|--|------------------------------|------------------------------------|
| Name of the Program: Bachelor of Commerce (B.Com.) | | |
| Course Code: B.Com. 4.2 | | |
| Name of the Course: Costing Methods and Techniques | | |
| Course Credits | No. of Hours per Week | Total No. of Teaching Hours |
| 4 Credits | 3+2 Hrs | 56 Hrs |
| Pedagogy: Classroom lectures, Case studies, Group discussion & Seminar etc., | | |
| Course Outcomes: On successful completion of the course, the Students will be able to <ul style="list-style-type: none"> a) The method of costing applicable in different industries. b) Determination of cost by applying different methods of costing. c) Prepare flexible and cash budget with imaginary figures d) Analyse the processes involved in standard costing. e) Familiarize with the Activity Based Costing and its applications. | | |
| Syllabus: | | Hours |
| Module No. 1: Job and Contract Costing | | 12 |
| Job Costing: Meaning, prerequisites, job costing procedure, Features, objectives, applications, advantages and disadvantages of Job costing, Job cost sheet- simple problems. Contract Costing: Meaning, features of contract costing, applications of contract costing, similarities and dissimilarities between job costing and contract costing, recording of contract costs, meaning of terms used in contract costing; treatment of profit on incomplete contracts-Problems. | | |
| Module No. 2: Process and Service Costing | | 12 |
| Process costing: Meaning, features and applications of Process Costing; comparison between Job Costing and Process Costing, advantages and disadvantages of process costing; treatment of process losses and gains in cost accounts; preparation of process accounts. Service costing: Introduction to service costing; Application of Service costing; Service costing v/s product costing; Cost units for different service sectors; Service cost statement; Determination of costs for different service sectors - Transport services, hospitals and educational institutions- problems on preparation of service cost statements for these service sectors. | | |
| Module No. 3: Activity Based Costing | | 10 |
| Introduction - Weakness of conventional costing system - concept of ABC - Characteristics of ABC - Kaplan and Cooper's Approach - cost drivers and cost pools - allocation of overheads under ABC -- Steps in the implementation of ABC - Benefits from adaptation of ABC system - difficulties faced by the industries in the successful implementation of ABC - Problems. | | |
| Module 4: Marginal Costing | | 12 |
| Meaning and Definition of marginal cost, marginal costing, features of marginal costing- terms used in marginal costing - P/V ratio, BEP, Margin of Safety, Angle of Incidence. Break Even Analysis assumptions and uses. Break Even Chart. (Theory). Problems on CVP analysis. | | |

| | |
|--|-----------|
| Module 5: Budgetary Control and Standard Costing | 10 |
| <p>Budgetary Control Introduction – Meaning & Definition of Budget and Budgetary Control – Objectives of Budgetary Control – essential requirements of budgetary control – advantages and disadvantages of budgetary control – Types of budgets- Functional Budgets - Cash budget, sales budget, purchase budget and production budget. Fixed and Flexible budgets - Problems on Flexible budget and Cash budget only.</p> <p>Standard Costing Introduction – Uses and limitations, variance analysis- Material variances, Labour variances and Overhead variances- problems on Material and Labour variances only.</p> | |
| <p>Skill Development Activities:</p> <ol style="list-style-type: none"> 1. Naming the appropriate method of costing with justification for each of the following Industries-Paper Mill, Printing, Sugar Mill, Rice Mill, Hospital, Oil Refinery, Pickle Manufacturing, KSRTC and Hotel. 2. List out the modern costing tools in accounting field. 3. Prepare flexible Budget and cash budget with imaginary figures 4. Narrate the steps involved in standard costing. System. 5. Prepare a report, which explains the conditions that are necessary for the successful implementation of a JIT manufacturing system. 6. Explain ABC. Illustrate how ABC can be applied. 7. Any other activities in addition to the above, which are relevant to the course. | |
| <p>Text Books:</p> <ol style="list-style-type: none"> 1. John K Shank and Vijaya Govindarajan; Strategic Cost Management; FreePress Publication; New York 2. S P Jain and K L Narang, Advanced Cost Accounting, Kalyani Publications, 3. Robert S Kaplan and Anthony A Atkinson, Advanced Management Accounting, PHI, New Delhi. 4. Shank and Govindarajan, Strategic Cost Management, Simon and Schuster, 36 New York. 5. Lin Thomas, Cases and Readings in Strategic Cost Management, McGrawHill Publications, New York. 6. Mariyappa B Methods and Techniques of Costing. HPH. <p>Note: Latest edition of Text books may be used.</p> | |

| | | |
|--|------------------------------|------------------------------------|
| Name of the Program: Bachelor of Commerce (B.Com.) Course Code: B.Com. 4.3 Name of the Course: Business Regulatory Framework | | |
| Course Credits | No. of Hours per Week | Total No. of Teaching Hours |
| 4 Credits | 4 Hrs | 56 Hrs |
| Pedagogy: Classroom lectures, Case studies, Group discussion, Seminar & field work etc., | | |
| Course Outcomes: On successful completion of the course, the Students will be able to <ol style="list-style-type: none"> Recognize the laws relating to Contracts and its application in business activities. Acquire knowledge on bailment and indemnification of goods in a contractual relationship and role of agents. Comprehend the rules for Sale of Goods and rights and duties of a buyer and a seller. Distinguish the partnership laws, its applicability and relevance. Rephrase the cyber law in the present context. | | |
| Syllabus: | | Hours |
| Module No. 1: Indian Contract Act, 1872 | | 12 |
| Introduction - Definition of Contract, Essentials of Valid Contract, Offer and acceptance, consideration, contractual capacity, free consent. Classification of Contract, Discharge of a contract, Breach of Contract and Remedies to Breach of Contract | | |
| Module No. 2: The Sale of Goods Act, 1930 | | 10 |
| Introduction - Definition of Contract of Sale, Essentials of Contract of Sale, Conditions and Warranties, Transfer of ownership in goods including sale by a non-owner and exceptions- Performance of contract of sale - Unpaid seller, rights of an unpaid seller against the goods and against the buyer | | |
| Module No. 3: Competition and Consumer Laws | | 12 |
| The Competition Act 2002 - Objectives of Competition Act, Features of Competition Act, CAT, Offences and Penalties under the Act, Competition Commission of India. Consumer Protection Act 1986 - Definitions of the terms - Consumer, Consumer Dispute, Defect, Deficiency, Unfair Trade Practices, and Services, Rights of Consumer under the Act, Consumer Redressal Agencies - District Forum, State Commission and National Commission. | | |
| Module No. 4: Economic Laws | | 12 |
| WTO patent rules - Indian Patent Act, 1970 - Meaning and Scope of Intellectual Property Rights (IPR), Procedure to get Patent for Inventions and Non-Inventions. FEMA 1999 - Objectives of FEMA, Salient Features of FEMA, Definition of Important Terms - Authorized Dealer, Currency - Foreign Currency, Foreign Exchange, Foreign Security. | | |
| Module 5: Environment and Cyber Laws | | 10 |

Environment Protection Act 1986 – Objectives of the Act, Definitions of Important Terms – Environment, Environment Pollutant, Environment Pollution, Hazardous Substance and Occupier, Types of Pollution, Powers of Central Government to protect Environment in India. **Cyber Law:** Definition, Introduction to Indian Cyber Law, Cyber space and Cyber security.

Skill Development Activities:

1. Discuss the case of “Carlill vs Carbolic Smoke Ball Company” case
2. Discuss the case of “Mohori Bibee v/s Dharmodas Ghose”.
3. Discuss any one case law relating to minor.
4. State the procedure for getting patent for ‘inventions’ and / or ‘non-inventions’.
5. List at least 5 items which can be categorized as ‘hazardous substance’ according to Environment Protection Act.
6. List out any top upcoming jobs in cyber security and examine the skills required for the same.
7. Any other activities, which are relevant to the course.

Text Books:

1. M.C. Kuchhal, and Vivek Kuchhal, Business Law, Vikas Publishing House, New Delhi.
2. Avtar Singh, Business Law, Eastern Book Company, Lucknow.
3. Ravinder Kumar, Legal Aspects of Business, Cengage Learning
4. SN Maheshwari and SK Maheshwari, Business Law, National Publishing House, New Delhi.
5. Aggarwal S K, Business Law, Galgotia Publishers Company, New Delhi
6. Bhushan Kumar Goyal and Jain Kinneri, Business Laws, International Book House
7. Sushma Arora, Business Laws, Taxmann Publications.
8. Akhileshwar Pathak, Legal Aspects of Business, McGraw Hill Education, 6th Ed.
9. P C Tulsian and Bharat Tulsian, Business Law, McGraw Hill Education
10. Sharma, J.P. and Sunaina Kanojia, Business Laws, Ane Books Pvt. Ltd., New Delhi
11. K. Rama Rao and Ravi S.P., Business Regulatory Framework., HPH
12. N.D. Kapoor, Business Laws, Sultan Chand Publications

Latest edition of text books may be used.

4.4 Constitution of India curriculum will be given by KSHIC

4.5 Sports/NCC/NSS/Others (If any) – as per concerned University Guidelines.

| | | |
|---|------------------------------|------------------------------------|
| Name of the Program: Bachelor of Commerce (B.Com.) Course Code: B.Com. 4.6 (OEC) Name of the Course: Business Ethics | | |
| Course Credits | No. of Hours per Week | Total No. of Teaching Hours |
| 3 Credits | 3 Hrs | 42 Hrs |
| Pedagogy: Classroom lectures, Case studies, Group discussion & Seminar etc., | | |
| Course Outcomes: On successful completion of the course, the students will be able to <ol style="list-style-type: none"> Explain the concepts of business ethics and its approaches. Examine the business and organizational ethics in the present context. Analyze the ethical aspects in marketing and HR areas. Analyze the ethical aspects in finance and IT areas. Examine the impact of globalization on business ethics. | | |
| Syllabus: | | Hours |
| Module No. 1: Business Ethics | | 08 |
| Introduction, Concepts and theories: Introduction, definitions, importance and need for Business ethics, Values and morals. Management and ethics, Normative Theories, – Gandhian Approach, Friedman’s Economic theory, Kant’s Deontological theory, Mill & Bentham’s Utilitarianism theory. | | |
| Module No. 2: Business & Organizational Ethics | | 10 |
| The Indian Business scene, Ethical Concerns, LPG & Global trends in business ethics, Business ethics rating in India. Organizations & Organization culture, Types of Organization, Corporate code of ethics –Formulating, Advantages, implementation Professionalism and professional ethics code. | | |
| Module No. 3: Ethical Aspects in Organization - I | | 08 |
| Marketing ethics and Consumer ethics – Ethical issues in advertising, Criticisms in Marketing ethics, Ethics in HRM: Selection, Training and Development – Ethics at workplace – Ethics in Performance Appraisal. | | |
| Module No. 4: Ethical Aspects in Organization - II | | 08 |
| Ethics in Finance: Insider trading - Ethical investment - Combating Frauds. Ethical issues in Information Technology: Information Security and Threats – Intellectual Property Rights – Cybercrime. | | |
| Module No. 5: Globalization and Business Ethics | | 08 |
| Growth of Global Corporations, Factors facilitating Globalisation, Impact of globalization on Indian corporate and social culture, Advantages and disadvantages of MNC’s to the Host Country, International codes of Business Conduct, Whistle blowing and its codes. | | |

Skill Development Activities:

1. The students may be asked to conduct the survey of any two organizations to study the ethical practices.
2. List out any five most ethical rating of Indian companies.
3. Collect the information on unethical practices in marketing and HR area.
4. Collect the information on unethical practices in finance and IT area.
5. Analyse and submit the report on the impact of globalization on Indian business houses in the context of ethical aspects.
6. Any other activities, which are relevant to the course.

Text Books:

1. Laura P Hartman, T, Perspectives in Business Ethics, Tata McGraw Hill.
2. B. H. Agalatti & R. P. Banerjee, Business Ethics –Concept & Practice, Nirali Publication.
3. R. P. Banerjee, Ethics in Business & Management, Himalaya Publication
4. Crane, Business Ethics, Pub. By Oxford Press
5. C S V Murthy, Business Ethics, Himalaya Publishing House

Note: Latest edition of text books may be used.

| | | |
|---|------------------------------|------------------------------------|
| Name of the Program: Bachelor of Commerce (B.Com.) Course Code: B.Com. 4.6 (OEC) Name of the Course: Corporate Governance | | |
| Course Credits | No. of Hours per Week | Total No. of Teaching Hours |
| 3 Credits | 3 Hrs | 42 Hrs |
| Pedagogy: Classroom lectures, Case studies, Group discussion & Seminar etc., | | |
| Course Outcomes: On successful completion of the course, the Students will be able to <ol style="list-style-type: none"> Identify the importance of corporate governance. Know the rights, duties and responsibilities of Directors. Analyse the legal & regulatory framework of corporate governance. Outline the importance and role of board committee. Understand the major expert committees' Reports on corporate governance. | | |
| Syllabus: | | Hours |
| Module No. 1: Corporate Governance | | 10 |
| Introduction, Its importance, Principles of corporate governance, OECD Principles of corporate governance, Theories of corporate governance-Agency theory and stewardship theory, Models of corporate governance around the world, Need for good corporate governance - Evolution of Corporate Governance - Ancient and Modern Concept - Concept of Corporate Governance, Generation of Value from Performance - Principles of Corporate Governance. | | |
| Module No. 2: Corporate and Board Management | | 10 |
| Corporate Business Ownership Structure - Board of Directors - Role, Composition, Systems and Procedures - Fiduciary relationship - Types of Directors-Promoter/Nominee/Shareholder/Independent - Rights, Duties and Responsibilities of Directors; Role of Directors and Executives - Responsibility for Leadership, Harmony between Directors and Executives -Training of Directors- need, objective, methodology -Scope and Responsibilities and competencies for directors - Executive Management Process, Executive Remuneration - Functional Committees of Board - Rights and Relationship of Shareholders and Other Stakeholders. | | |
| Module No. 3: Legal and Regulatory Framework of Corporate Governance | | 08 |
| Need for Legislation of Corporate Governance - Legislative Provisions of Corporate Governance in Companies Act 1956, Securities (Contracts and Regulations) Act, 1956 (SCRA), Depositories Act 1996, Securities and Exchange Board of India Act 1992, Listing Agreement, Banking Regulation Act, 1949 and Other Corporate Laws - Legal Provisions relating to Investor Protection. | | |
| Module No. 4: Board Committees and Role of Professionals | | 08 |

Board Committees - Audit Committee, Remuneration Committee, Shareholders' Grievance Committee, other committees - Need, Functions and Advantages of Committee Management - Constitution and Scope of Board Committees - Board Committees' Charter - Terms of Reference and Accountability and Performance Appraisals - Attendance and participation in committee meetings - Independence of Members of Board Committees - Disclosures in Annual Report; Integrity of Financial Reporting Systems - Role of Professionals in Board Committees - Role of Company Secretaries in compliance of Corporate Governance.

Module No. 5: Corporate Governance – Codes and Practices

06

Introduction - Major Expert Committees' Reports of India - Study of Codes of Corporate Governance - Best Practices of Corporate Governance - Value Creation through Corporate Governance - Corporate Governance Ratings.

Skill Development Activities:

1. Collect the annual reports of any two companies, find out the corporate governance aspects in the reports.
2. Collect any two companies Board of Directors names and find out their nature of directorship.
3. Prepare report on the applicability of different models of Corporate Governance.
4. Critically compare the recommendations of various corporate governance committee.
5. Any other activities, which are relevant to the course.

Text Books:

1. Bairs N. and D Band, Winning Ways through Corporate Governance, Macmillan London.
2. Charkham J, Keeping Good Company: A Study of Corporate Governance in Five Countries, Oxford University Press, London.
3. Subhash Chandra Das, Corporate Governance in India – An Evaluation (Third edition), PHI Learning Private Limited.
4. Clark T. and E Monk House, Rethinking the Company, Pitman, London.
5. Fernando A.C, Corporate Governance, Pearson Education.
6. Prentice D.D. and PRJ Holland, Contemporary Issues in Governance, Clarendon Press.
7. Report of the Cadbury Committee on Financial Aspects of Corporate Governance, London Stock Exchange, London.
8. Report on Corporate Governance, Confederation of India Industries and Bombay.

Note: Latest edition of text books may be used.

1.1 Guidelines For Continuous Internal Evaluation and Semester End Examination

The Members of the Committee deliberated on the framework of Continuous Internal Evaluation (CIE) as well Semester End Examination (SEE) for the courses. The CIE and SEE will carry 40% and 60% weightage each, to enable the course to be evaluated for a total of 100 marks, irrespective of its credits. The evaluation system of the course is comprehensive & continuous during the entire period of the Semester. For a course, the CIE and SEE evaluation will be on the following parameters:

| Sl. No. | Parameters for the Evaluation | Marks |
|---------|--------------------------------------|-----------|
| | Continuous Internal Evaluation (CIE) | |
| 1 | Assignment (s) | 08 Marks |
| | Seminar (s) | 08 Marks |
| | Attendance * | 08 Marks |
| 2 | Internal Assessment Tests (IAT) | 16 Marks |
| | Total of CIE (A) | 40 Marks |
| 3 | Semester End Examination (SEE) (B) | 60 Marks |
| | Total of CIE and SEE (A + B) | 100 Marks |

* Attendance

| | |
|--------------|----------|
| Up to 74.99 | 0 Mark |
| 75-77.99 | 02 Marks |
| 78-80.99 | 03 Marks |
| 81-83.99 | 04 Marks |
| 84-86.99 | 05 Marks |
| 87-89.99 | 06 Marks |
| 90-92.99 | 07 Marks |
| 93 and above | 08 Marks |

- a. **Continuous & Comprehensive Evaluation (CCE):** The CCE will carry a maximum of 16% weightage (16 marks) of total marks of a course. Before the start of the academic session in each semester, a faculty member should choose for his/her course, minimum of four of the following assessment methods with four marks each:
- Individual Assignments
 - Seminars/Class Room Presentations/ Quizzes
 - Group Discussions /Class Discussion/ Group Assignments
 - Case studies/Case lets
 - Participatory & Industry-Integrated Learning/ Field visits
 - Practical activities / Problem Solving Exercises
 - Participation in Seminars/ Academic Events/Symposia, etc.
 - Mini Projects/Capstone Projects
 - Any other academic activity

- b. **Internal Assessment Tests (IAT):** The IAT will carry a maximum of 40% weightage (40 marks) of total marks of a course, under this component, two tests will have to be conducted in a semester for 34 marks each and the same is to be scaled down to 16 marks each. Standard format is given below.
- c. In case of 50 percent of CIE weightage courses, faculty members can choose assessments methods accordingly for the required marks as mentioned above.

Suggestive Template for IAT

Internal Assessment Test: Bachelor of Commerce (B.Com.)

Course Code:

Duration: 1½ Hours

Name of the Course:

Total Marks: 34

SECTION-A

I. Answer any two of the following questions. Questions are asked on Remembering.

(2 x 2 = 04)

- 1.
- 2.
- 3.

SECTION- B

II. Answer any two of the following questions. Questions are asked on Understanding.

(05 x 2= 10)

- 4.
- 5.
- 6.

SECTION- C

I. Answer any two of the following questions. Questions are asked on Understanding and Applying.

(10 x 2= 20)

- 7.
- 8.
- 9.

.....

Note: Internal Test question papers format is prepared based on Revised Bloom's Taxonomy.

(https://www.apu.edu/live_data/files/333/blooms_taxonomy_action_verbs.pdf)

Semester End Examination (SEE):

The Semester End Examination for all the courses for which students who get registered during the semester shall be conducted. SEE of the course shall be conducted after fulfilling the minimum attendance requirement as per the Universities/Institutes' norms. The Members of the Committee also deliberated on the framework of Semester End Examination (SEE) and suggested to give autonomy to Board of Studies (BOS) of Universities/Institutes to have their own Framework. The BOS of the Universities/Institutes shall prepare the SEE Framework by considering the 'Revised Bloom's Taxonomy', since the courses are designed based on Outcome Based Education.

Instructions for Question Paper Setters:

1. The question paper setter shall use Revised Bloom's Taxonomy Action Verbs, since the students answers are assessed based on course outcomes. (As a part of OBE).
2. The question paper setter shall set the two/three questions from each module as per the pattern.
3. Each module can have sub-questions.
Example:

- | | |
|-----------|-------------|
| 1. A..... | (02 Marks) |
| B..... | (05 Marks) |
| C..... | (10 Marks) |

4. While setting sub-questions, question paper setters can assign the weightage of the marks as per the need/importance of the questions, but it should not exceed the maximum marks of the module.

DAVANGERE UNIVERSITY
QUESTION PAPER PATTERN W.E.F. 2021-22 ONWARDS
SEMESTER END EXAMINATIONS
B.COM. PROGRAM

Name of the Course:

Time: 03 Hrs.

Max. Marks: 60

Note: Answer any FIVE full questions, choosing one full question from each module.

Module No. 01

| | | |
|----|----|----------|
| 1. | OR | 12 Marks |
| 2. | | 12 Marks |

Module No. 02

| | | |
|----|----|----------|
| 3. | OR | 12 Marks |
| 4. | | 12 Marks |

Module No. 03

| | | |
|----|----|----------|
| 5. | OR | 12 Marks |
| 6. | | 12 Marks |

Module No. 04

| | | |
|----|----|----------|
| 7. | OR | 12 Marks |
| 8. | | 12 Marks |

Module No. 05

| | | |
|-----|----|----------|
| 9. | OR | 12 Marks |
| 10. | | 12 Marks |

| Skill Enhancement Courses/Generic/OECs | |
|---|--|
| Sl. No. | Name of the Courses |
| 1 | Community Project Reports & Viva Voce |
| 2 | Company Financial Statements Analysis and Reports |
| 3 | Internship in Audit firms |
| 4 | Industry Analysis and Reports |
| 5 | E-Commerce |
| 6 | Collective Bargaining & Negotiation Skills in Business |
| 7 | Training & Development |
| 8 | Stock Market Operations |
| 9 | Communication & Documentation |
| 10 | New Venture Planning and Development |
| 11 | Personal Tax Planning and Tax Management |
| 12 | Cyber Security |
| 13 | Leadership & Team Development |
| 14 | Event Management |
| 15 | Basics of Spreadsheets modelling |
| 16 | Advanced Spreadsheets modelling |
| 17 | Advertisement & Personal Selling |
| 18 | Managing Digital Platforms |
| 19 | ERP Applications |
| 20 | Business Communication |
| 21 | Life Skills |
| 22 | Managerial Skills |
| 23 | Personal Financial Planning |
| 24 | Accounting for Everyone |
| 25 | Financial Literacy |
| 26 | Financial Environment |
| 27 | Public Policy |
| 28 | Investment in Stock Markets |
| 29 | Good Governance |
| 30 | Sustainable Development Goals |
| 31 | Risk Management |
| 32 | Digital Marketing |
| 33 | Others (if any) |

Programme Structure for Bachelor of Science (Basic/Hons.) (Physics) Programme (Subjects with Practical)

| Sem. | Discipline Core(DSC) (Credits) | Discipline Elective(DSE) /Open Elective (OE) (Credits) | Ability Enhancement Compulsory Courses (AECC), Languages (Credits) (L+T+P) | | Skill Enhancement Courses (SEC) | | | Total Credits |
|---|--|---|--|------------------------------|--|-------------------------------|---|------------------|
| | | | | | Skill based (Credits) (L+T+P) | Value based (Credits) (L+T+P) | | |
| I | DSC A1(4+2) DSC B1(4+2) | OE-1 (3) | L1-1(3), L2-1(3) (4 hrs. each) | | SEC-1: (2) (1+0+2) | Yoga (1) (0+0+2) | Health & Wellness (1) (0+0+2) | 25 |
| II | DSC A2(4+2) DSC B2(4+2) | OE-2 (3) | L1-2(3), L2-2(3) (4 hrs. each) | Environmental Studies (2) | | Sports (1) (0+0+2) | NCC/NSS/R&R(S&G)/ Cultural (1) (0+0+2) | 25 |
| Exit option with Certificate (48 credits) | | | | | | | | |
| III | DSC A3(4+2) DSC B3(4+2) | OE-3 (3) | L1-3(3), L2-3(3) (4 hrs. each) | | SEC-2: (2)(1+0+2) | Sports (1) (0+0+2) | NCC/NSS/R&R(S&G)/ Cultural (1) (0+0+2) | 25 |
| IV | DSC A4(4+2) DSC B4(4+2) | OE-4 (3) | L1-4(3), L2-4(3) (4 hrs. each) | Constitution of India (2) | | Sports (1) (0+0+2) | NCC/NSS/R&R(S&G)/ Cultural (1) (0+0+2) | 25 |
| Exit option with Diploma in a particular Discipline (96 credits) | | | | | | | | |
| V | DSC A5(3+2) DSC A6(3+2) DSC B5(3+2) DSC B6(3+2) | | | | SEC-3: SEC (2) (1+0+2) | Sports (1) (0+0+2) | NCC/NSS/R&R(S&G)/ Cultural (1) (0+0+2) | 24 |
| VI | DSC A7(3+2) DSC A8(3+2) DSC B7(3+2) DSC B8(3+2) | | | | SEC-4: Professional Communication (2) | Sports (1) (0+0+2) | NCC/NSS/R&R(S&G)/ Cultural (1) (0+0+2) | 24 |
| Exit with Bachelor of Degree in a particular Discipline (140 credits) | | | | | | | | |
| VII | DSC A/B9(3+2) DSC A/B10(3+2) DSC A/B11(3) | DSC A/B E-1 (3) DSC A/B E-2 (3) Res. Methodology (3) | | | | | | 22 |
| VIII | DSC A/B12(3) DSC A/B13(3) DSC A/B14(3) | DSC A/B E-3 (3) DSC A/B E-4 (3) Research Project (6)* | | | | | | 21 |
| Award of Bachelor of Degree with Honours, B.Sc (Hons.) 180 credits) | | | | | | | | |

*In lieu of the research Project, two additional elective papers/ Internship may be offered.

Note: 1) Instruction hours per week: DSC-4 hrs; Practical-4 hrs; OE-3 hrs.

2) Max marks: DSC - 100 (IA 40+Exam 60); Practical – 50 (IA 25+Exam 25);
OE – 100 (IA 40+Exam 60).

3) The theory IA will be based on (i) Average of 2 tests: 20 marks, (ii) activity/ seminars/ projects :20 marks.

4) The practical IA will be based on (i) Regular performance:15 marks,
(ii) test/seminars: 10 marks.

5) Duration of Annual Examination: Theory-2hrs; Practical-4hrs.

Curriculum Structure-Physics

(Core and Electives)

Semesters- I to X

| SEM | DSC | Core Papers |
|---------------|-------------------|--|
| Sem-1 | A1 | Mechanics and Properties of Matter |
| Sem-2 | A2 | Electricity and Magnetism |
| Sem-3 | A3 | Wave Motion and Optics |
| Sem-4 | A4 | Thermal Physics and Electronics |
| Sem-5 | A5 A6 | 1. Classical Mechanics and Quantum Mechanics- I 2. Elements of Atomic, Molecular Physics |
| Sem-6 | A7 A8 | 1. Elements of Nuclear Physics and Nuclear Instruments 2. Elements of Condensed Matter Physics |
| Sem-7 | A9 A10 A11 | 1. Mathematical Methods of Physics – I 2. Classical Electrodynamics. 3. Experimental methods of Physics 4. Research Methodology (Select Two DSE subjects from the Pool B-I shown below) |
| Sem-8 | A12 A13 A14 | 1. Classical Mechanics and Quantum Mechanics-II 2. Statistical Mechanics 3. Astrophysics & Astronomy 4. Research Project* (Select Two DSE subjects from the Pool B-II shown below) *In lieu of the research Project, two additional elective papers/ Internship may be offered. |
| Sem-9 | A15 | 1. Mathematical Methods of Physics – II (Select One DSE subjects from the Pool B-III shown below) 2. Research Project |
| Sem-10 | A17 | 1. Quantum Mechanics – III (Select One DSE subjects from the Pool B-IV shown below) 2. Research Project |

* The Courses of 3rd Semester and above need to be revisited.

Open Electives for 1st and 2nd Semester

| Sem. | Courses |
|------|-----------------------------|
| 1. | Energy Sources |
| 2. | Astronomy and Space Mission |

Discipline Specific Electives for 7th to 10th Semesters

| | 7th Sem Electives Pool B-I (Select any two) | | 8th Sem Electives Pool B-II (Select any two) |
|----|---|----|--|
| A. | Condensed Matter Physics-I | A. | Atomic & Molecular Physics-1 |
| B. | Nuclear and Particle Physics | B. | Materials Physics & Nano materials |
| C. | Theoretical and Computational Physics-I | C. | Lasers and non-linear optics |
| D. | Biophysics | D. | Plasma Physics |
| E. | Astronomy and Astrophysics | E. | Physics of Semiconductor devices |

| | 9th Sem Electives (Specialization papers) Pool B-III | | 10th Sem Electives (Specialization papers) Pool B-IV |
|----|--|----|--|
| A. | Condensed Matter Physics-2 | A. | Condensed Matter Physics-3 |
| B. | Nuclear and Particle Physics-2 | B. | Nuclear and Particle Physics-3 |
| C. | Atomic & Molecular spectroscopy-1 | C. | Atomic & Molecular spectroscopy-2 |
| D. | Materials Physics & Nanophysics –1 | D. | Materials Physics & Nanophysics -2 |
| E. | Theoretical and Computational Physics-I | E. | Theoretical and Computational Physics-2 |
| F. | Astronomy and Astrophysics-1 | F. | Astronomy and Astrophysics-2 |

Detailed Syllabus for Semesters I & II

B.Sc., Physics

Detailed Syllabus for Semesters I & II

Semester – I

Mechanics and Properties of Matter

Programme Outcomes (POs)

PO-1: Discipline Knowledge: Knowledge of science and ability to apply to relevant areas.

PO-2: Problem solving: Execute a solution process using first principles of science to solve problems related to respective discipline.

PO-3: Modern tool usage: Use a modern scientific, engineering and IT tool or technique for solving problems in the areas of their discipline.

PO-4: Ethics: Apply the professional ethics and norms in respective discipline.

PO-5: Individual and teamwork: Work effectively as an individual as a team member in a multidisciplinary team.

PO-6: Communication: Communicate effectively with the stake holders, and give and receive clear instructions.

Course Articulation Matrix:

Mapping of Course Outcomes (COs) with Program Outcomes (POs)

Program Outcomes (POs)

| Course Outcomes (COs) (UGC guidelines) | 1 | 2 | 3 | 4 | 5 | 6 |
|--|---|---|---|---|---|---|
| CO-1: Will learn fixing units, tabulation of observations, analysis of data (graphical/analytical) | x | x | | | | x |
| CO-2: Will learn about accuracy of measurement and sources of errors, importance of significant figures. | x | x | | | | |
| CO-3: Will know how g can be determined experimentally and derive satisfaction. | x | | | | | |
| CO-4: Will see the difference between simple and torsional pendulum and their use in the determination of various physical parameters. | x | | | x | x | x |
| CO-5: Will come to know how various elastic moduli can be determined. | x | | | | x | x |
| CO-6: Will measure surface tension and viscosity and appreciate the methods adopted. | x | x | | | | |
| CO-7: Will get hands on experience of different equipment. | x | x | x | | x | x |

Course Articulation Matrix relates course outcomes of course with the corresponding program outcomes whose attainment is attempted in this course are Marked 'X' in the intersection cell if a course outcome addresses a particular program outcome.

| Mechanics & Properties of Matter | | Hrs |
|---|--|------------|
| Credit : 4+2 Unit – 1 Theory : 4 hours /Week | | |
| Chapter No. 1 | Units and measurements: System of units (CGS and SI), dimensions of physical quantities, dimensional formulae. Minimum deviation, errors and error analysis Vectors: Instantaneous velocity and acceleration, Derivative of planar vector of constant magnitude but changing direction. Arbitrary planar motion, radial and transverse component of velocity and acceleration, deduction of the results of uniform circular motion. | (13) |
| Chapter No. 2 | Momentum and Energy: Work and energy, Conservation of linear and angular momentum. Conservation of energy with examples. Motion of rockets. Problems | |
| Chapter No. 3 | Special Theory of Relativity: Inertial and non-inertial frames of reference, Galilean transformation equation, Galilean principle of relativity. Search for absolute frame of reference, Ether concept, Null result of Michelson Morley experiment, Constancy of speed of light. Postulates of Special Theory of Relativity. Length contraction. Time dilation. Twin paradox, Relativistic addition of velocities, Einstein's mass energy relation-photon box experiment. Problems | |
| Topics for self study | Self Study Units and measurements: Measurement of length, mass and time. Laws of Motion: Newton's Laws of motion. Dynamics of single and a system of particles. Centre of mass. | |
| | Suggested Activities | |
| Activity No. 1 | i). Students can measure diameters of small balls of different size and estimate their volumes. ii). Students can measure lengths of nails of different size. iii). Students can measure volume of a liquid. iv). Students can measure distances and put the result both in CGS and SI units in 2, 3 and 4 significant figures. Ask them to mention the precession of the measurement. v). students can estimate standard deviations wherever possible. | |
| Activity No. 2 | Students can try and understand conservation of energy in every day examples. For example: i) What happens in solar conservation panels ii) Pushing an object on the table it moves iii) Moving car hits a parked car causes parked car to move. In these cases, energy is conserved. How? Understand and verify if possible. Students can try and understand conservation of momentum with help of coins and balls by referring to websites. Reference: https://www.youtube.com/ | |

| Unit – 2 | | |
|---|--|-----|
| Chapter No. 4. | Laws of Motion: Conservative and non-conservative forces. Deduction of conservation of energy in conservative force field. Centre of mass. Simple harmonic motion – vertical oscillations of the light loaded spring, expression for force constant and determination of acceleration due to gravity, Problems | (3) |
| Chapter No. 5. | Dynamics of Rigid bodies: Rotational motion about an axis, Relation between torque and angular momentum, Rotational energy. Moment of inertia: Theorem of perpendicular axis and Theorem of parallel axes, Moment of Inertia of a rectangular Lamina, Circular disc and ring and solid cylinders. Flywheel, theory of compound pendulum and determination of 'g'. Problems | (7) |
| Chapter No. 6. | Gravitation: Law of Gravitation. Motion of a particle in a central force field (motion is in a plane, angular momentum is conserved, areal velocity is constant). Kepler's laws (statements). Satellite in a circular orbit. Problems | (3) |
| Topics for self study (If any) Chapter 7 | Escape velocity, Geosynchronous orbits. Basic idea of global positioning system (GPS). | |
| | Suggested Activities | |
| Activity No. 3 | <p>Activity:</p> <p>Moment of inertia is an abstract concept. It simply gives a measure of rotational inertia of a rigid body and it is proportional to the product of the square of radius, r of the body and its mass, m. Students by Referring to websites, students can construct and perform simple experiments to verify that $MI \propto mr^2$.</p> <p>Students can try to understand law of inertial with the help of coins and balloons by referring to websites.</p> <p>Reference : www.khanacademy.org, www.pinterest.com, www.serc.cerleton.edn, https://www.youtube.com</p> | |
| Activity No. 4 | <p>Activity:</p> <p>Prepare suitable charts and give seminar talks related to moment of inertia, gravitation and planetary motion.</p> | |
| Activity No. 5 | <p>(i) Rolling of different disc and cylinders on inclined plane to understand the moment of inertia.</p> <p>(ii) Listing and discussing the moment of inertia of bodies come across in daily life.</p> | |

| Unit - 3 | | |
|-----------------------|---|------|
| Chapter No. 8 | <p>Elasticity: Hooke's law - Stress-strain diagram, elastic moduli-relation between elastic constants, Poisson's Ratio-expression for Poisson's ratio in terms of elastic constants.</p> <p>Work done in stretching and work done in twisting a wire-Twisting couple on a cylinder.</p> <p>Torsional pendulum-Determination of rigidity modulus and moment of inertia - η and σ by Searle's method</p> <p>Bending moment of beams, Cantilever bending and uniform bending, I - section of girders. Problems.</p> | (13) |
| | Suggested Activities | |
| Activity No. 6 | <p>Activity:</p> <p>Arrange a steel spring with its top fixed with a rigid support on a wall and a meter scale alongside. Add 100 g load at a time on the bottom of the hanger in steps. This means that while putting each 100g load, we are increasing the stretching force by 1N. Measure the extension for loads up to 500g. Plot a graph of extension versus load. Shape of the graph should be a straight line indicating that the ratio of load to extension is constant. Go for higher loads and find out elastic limit of the material.</p> | |
| Activity No.7 | <p>Activity:</p> <p>Repeat the above experiment with rubber and other materials and find out what happens after exceeding elastic limit. Plot and interpret.</p> | |
| Activity No 8 | <p>Activity: Classifying different materials in to elastic and plastic materials. Studying the bending magnitudes of different shape and material rods.</p> | |

| Unit - 4 | | |
|--|--|------|
| Chapter No. 9 | <p>Surface tension: Definition of surface tension. Surface energy, relation between surface tension and surface energy, pressure difference across curved surface example, excess pressure inside spherical liquid drop, angle of contact., Surface tension by drop weight method, Interfacial surface tension, Problems.</p> | (13) |
| Chapter No. 10 | <p>Viscosity: Streamline flow, turbulent flow, equation of continuity, determination of coefficient of viscosity by Poiseuille's method, Stoke's method. Problems.</p> | |
| Topics for self study (If any) | <p>Variation of surface tension with temperature, Surface tension by Capillarity rise, Application of viscosity.</p> | |

| Suggested Activities | | |
|------------------------|--|--|
| Activity No.9 | <p>1. Measure surface tension of water and other common liquids and compare and learn</p> <p>i) Why water has high ST? think of reasons.</p> <p>ii) Check whether ST is a function of temperature? You can do it by heating the water to different temperatures and measure ST.</p> <p>iii) Plot ST versus T and learn how it behaves.</p> <p>Mix some quantity of kerosene or any oil to water and measure ST. Check whether ST for the mixture is more or less than pure water. List the reasons.</p> | |
| Activity No. 10 | <p>Activity:</p> <p>2. Collect a set of different liquids and measure their viscosity.</p> <p>i) Find out whether sticky or non-sticky liquids are most viscous. List the reasons.</p> <p>ii) Mix non sticky liquid to the sticky liquid in defined quantities and measure viscosity. Find out viscosity is increasing or decreasing with increase of non-sticky liquid concentration.</p> <p>iii) Do the above experiment by mixing sticky liquid to the non-sticky liquid. Find out change in viscosity with increase of concentration of sticky liquid.</p> <p>List the applications where concept of Viscosity plays a dominant role</p> | |

Text Books:

| Sl No | Title of the Book | Authors Name | Publisher | Year of Publication |
|-------|--|------------------------|------------------------|---------------------|
| 1 | Mechanics by, New Eition | D. S. Mathur | S.Chand & Co. | 2000 |
| 2 | Mechancis and Relativity by 3 rd Edition, | Vidwan Singh Soni, | PHI Learning Pvt. Ltd. | 2013 |
| 3 | Mechanics Berkeley Physics Course, Vol.1: | Charles Kittel, et.al. | Tata McGraw-Hill | 2007 |
| 4 | Properties of Matter | Brijlal & Subramanyam. | S.Chand & Co | 2014 |
| 5 | Physics for Degree Students | CL Aurora & PS Hemne | S.Chand & Co | 2010 |
| 6 | Mechanics | J C Upadhyaya | Himalaya | 2016 |

References Books

| Sl No | Title of the Book | Authors Name | Publisher | Year of Publication |
|-------|--|--|---------------------------------------|---------------------|
| 1 | Principles of Physics 9 th Edn, | Resnick, Halliday & Walker, | Wiley | 2013 |
| 2 | Conceptual Physics, 10 th Edn | Paul G Hewit | Pearson | 2012 |
| 3 | Introduction to Special Theory of Relativity | Robert Resnick | Wiley Student Edition | 2014 |
| 4 | Physics for Scientists and Engineers | Jewett & Serway | Cengage learning India Pvt Ltd, Delhi | 2012 |
| 5 | The Feynman Lectures on Physics – Vol 1 | Richard P Feynman, Robert B Leighton, Mathew Sands | Narosa Publishing House | 1986 |
| 6 | Physics – (International Student Edition) | Marcelo Alonso & Edward J Finn | Addison – Wesley | 1999 |
| 7 | Concepts of Modern Physics | Arthur Beiser | Tata Mcgraw Hill | 1998 |
| 8 | Modern Physics | Kenneth Krane | Wiley | 2012 |
| 9 | Newtonian Mechanics | AP French | Viva Books | 2017 |
| 10 | Modern Physics | G Aruldas & P Rajgopal | PHI Learning Pvt. Ltd. | 2009 |

List of Experiments to be performed in the Laboratory:

| | |
|-----|---|
| 1. | Determination of g using bar pendulum (two hole method and L versus T graphs). |
| 2. | Determination of moment of inertia of a Fly Wheel. |
| 3. | Determination of rigidity modulus using torsional pendulum. |
| 4. | Modulus of rigidity of a rod – Static torsion method. |
| 5. | Determination of elastic constants of a wire by Searle's method. |
| 6. | Young's modulus by Koenig's method. |
| 7. | Viscosity by Stokes' method. |
| 8. | Verification of Hooke's law by stretching and determination of Young's Modulus. |
| 9. | Determination of surface tension of a liquid by drop weight method. |
| 10. | Study of motion of spring and to calculate the spring constant, g and unknown mass. |
| 11. | Determination of Young's modulus of a bar by the single cantilever method. |
| 12. | Determination of Young's modulus of a bar by uniform bending method. |
| 13. | Radius of capillary tube by mercury pellet method. |
| 14. | Verification of parallel and perpendicular axis theorems. |
| 15. | Determination of interfacial tension between two liquids using drop weight method. |
| 16. | Determination of viscosity of liquids by Poiseuille's method. |

(Minimum EIGHT experiments have to be carried out).

Reference Book for Laboratory Experiments

| Sl No | Title of the Book | Authors Name | Publisher | Year of Publication |
|-------|--|-------------------------------------|---|---------------------|
| 1 | Advanced Practical Physics for students | B.L. Flint and H.T. Worsnop | Asia Publishing House. | 1971 |
| 2 | A Text Book of Practical Physics | I. Prakash & Ramakrishna | Kitab Mahal, 11 th Edition | 2011 |
| 3 | Advanced level Physics Practicals | Michael Nelson and Jon M. Ogborn | Heinemann Educational Publishers, 4 th Edition | 1985 |
| 4 | A Laboratory Manual of Physics for undergraduate classes | D.P.Khandelwal | Vani Publications. | 1985 |
| 5 | BSc Practical Physics Revised Ed | CL Arora | S.Chand & Co | 2007 |
| 6 | An advanced course in practical physics | D. Chatopadhyay, PC Rakshit, B.Saha | New Central Book Agency Pvt Ltd | 2002 |

Semester – II

Electricity & Magnetism

Programme Outcomes

PO - 1 Discipline Knowledge: Knowledge of science and ability to apply to relevant areas.

PO - 2 Problem solving: Execute a solution process using first principles of science to solve problems related to respective discipline.

PO - 3 Modern tool usage: Use a modern scientific, engineering and IT tool or technique for solving problems in the areas of their discipline.

PO - 4 Ethics: Apply the professional ethics and norms in respective discipline.

PO - 5 Individual and teamwork: Work effectively as an individual as a team member in a multidisciplinary team.

PO - 6 Communication: Communicate effectively with the stake holders, and give and receive clear instructions.

Course Articulation Matrix: Mapping of Course Outcomes (COs) with Program Outcomes (POs)

Program Outcomes (POs)

| Course Outcomes (COs) | 1 | 2 | 3 | 4 | 5 | 6 |
|--|---|---|---|---|---|---|
| i. Will demonstrate Gauss law, Coulomb's law for the electric field, and apply it to systems of point charges as well as line, surface, and volume distributions of charges. | x | x | | | | |
| ii. Will explain and differentiate the vector (electric fields, Coulomb's law) and scalar (electric potential, electric potential energy) formalisms of electrostatics. | x | | | | | |
| iii. Will be able to apply Gauss's law of electrostatics to solve a variety of problems. | x | x | | | x | |
| iv. Will describe the magnetic field produced by magnetic dipoles and electric currents. | x | | | | | |
| v. Will be able to explain Faraday-Lenz and Maxwell laws to articulate the relationship between electric and magnetic fields. | x | | | | | |
| vi. Will be in position to describe how magnetism is produced and list examples where its effects are observed. | x | | | | x | x |
| vii. Will be able to apply Kirchhoff's rules to analyze AC circuits consisting of parallel and/or series combinations | x | x | | | x | x |

| | | | | | | |
|--|---|---|--|--|---|---|
| of voltage sources and resistors and to describe the graphical relationship of resistance, capacitor and inductor. | | | | | | |
| viii. Will understand and able to apply various network theorems such as Superposition, Thevenin, Norton, Reciprocity, • Maximum Power Transfer, etc. and their applications in electronics, electrical circuit analysis, and electrical machines. | X | X | | | X | X |

Course Articulation Matrix relates course outcomes of course with the corresponding program outcomes whose attainment is attempted in this course. Mark 'X' in the intersection cell if a course outcome addresses a particular program outcome.

| Electricity & Magnetism | | Hrs |
|---------------------------------------|--|------------|
| Unit – 1 | | |
| Chapter No. 1 | Topics to be covered: Electric charge and field Coulomb's law, electric field strength, electric field lines, point charge in an electric field and electric dipole, work done by a charge (derivation of the expression for potential energy), Problems. | 3 |
| Chapter No. 2 | Topics to be Covered Gauss's law and its applications (electric fields of a (i) spherical charge distribution, (ii) line charge and (iii) an infinite flat sheet of charge). | 3 |
| Chapter No. 3 | Topics to be Covered Electric potential, line integral, gradient of a scalar function, relation between field and potential. Potential due to point charge and distribution of charges (Examples: potential associated with a spherical charge distribution, infinite line charge distribution, infinite plane sheet of charges). Constant potential surfaces, Potential due to a dipole and electric quadrupole. Problems | 7 |
| Topics for self study(If any) | Constant potential surfaces - for self learning Work out problems listed in the reference | |
| Suggested Activities | | |
| Activity No. 1 | 1. Learn the difference between and DC and AC electricity and their characteristics. Voltage and line frequency standards in different countries. 2. A small project report on production of electricity as a source of energy: Different methods | |

| | | |
|---------------------------------------|--|---|
| | 3. With the help of glass rod, plastic rod, silk, and fur demonstrate the generation of charge and electrostatic attraction and repulsion. | |
| Activity No. 2 | <ol style="list-style-type: none"> 1. Learn to use a multimeter (analog and digital) to measure voltage, current and resistance. Continuity testing of a wire. 2. Learn about household electrical connection terminals: Live, neutral and ground and voltage between the terminals. Role of earthing and safety measures | |
| Unit – 2 | | |
| Chapter No. 4. | Topics to be covered Conductors in electrostatic field Conductors and insulators, conductors in electric field. Capacitance and capacitors, calculating capacitance in a parallel plate capacitor, parallel plate capacitor with dielectric, dielectrics: an atomic view. Energy stored in a capacitor, Dielectric and Gauss's law, Problems. | 6 |
| Chapter No. 5. | Topics to be covered Electric currents and current density. Electrical conductivity and Ohm's law. Physics of electrical conduction, conduction in metals and semiconductors, circuits and circuit elements: Variable currents in capacitor circuits, Resistor, inductor and capacitor and their combination, charging and discharging of capacitor. Force on a moving charge. Problems. | 7 |
| Topics for self study(If any) | Currents and voltage in combination of R, L and C circuits, Kirchoff's laws of voltage & Current | |
| Suggested Activities | | |
| Activity No. 3 | <ol style="list-style-type: none"> 1. Learn about electrical appliances which work with AC and DC electricity 2. Learn about types of resistors and their colour codes and types of capacitors(electrolytic and non-electrolytic) | |
| Activity No. 4 | <ol style="list-style-type: none"> 1. Learn about power transmission: 3-phase electricity, voltage and phase 2. Visit a nearby electrical power station. Interact with line men, Electrical engineers and managers. Discuss about power loss in transmission. How to reduce it? 3. Prepare a small project report on street lighting and types of electrical bulbs. | |

| Unit – 3 | | |
|---------------------------------------|---|----|
| Chapter No.6 | Topics to be covered Magnetism Definition of magnetic field, Ampere’s law and Biot-Savart law (magnetic force and magnetic flux), Magnetic force on a current carrying conductor, Hall effect. Electromagnetic induction, conducting rod moving in a magnetic field, law of induction and mutual inductance, self inductance and energy stored in a magnetic field. Problems. | 5 |
| Chapter No. 7 | Topics to be covered Alternating current circuits: Resonant circuit, alternating current, quality factor, RL, RC, LC, LCR circuits, admittance and impedance, power and energy in AC circuits. Filters – High and Low and band pass filters (qualitative), Problems. | 8 |
| Topics for self study(If any) | Force acting on a moving charge in electric and magnetic fields – Lorentz force, Magnetic dipole moment – torque on a magnetic dipole. | |
| Suggested Activities | | |
| Activity No. 5 | Activity: 1. Prepare a small project report on street lighting and types of electrical bulbs. 2. Learn the measurement of electric current using tangent galvanometer. | |
| Activity No.6 | Activity: Build a small coil with insulated copper wire. Connect an ammeter micro/milli ammeter. Verify magnetic induction using a powerful bar magnet. | |
| Unit - 4 | | |
| Chapter No. 8 | Electromagnetic waves: Scalar and vector fields, operator grad, the gradient of a scalar function, integration theorems – line integral, surface integral, volume integral, divergence and curl of a vector, Gauss and Stokes theorems (qualitative), Equation of continuity, Maxwell’s equations, displacement current, electromagnetic wave, energy transported by electromagnetic waves. Electromagnetic waves in different frames of reference, the field of a current loop, magnetic moment, Electric current in atoms, electron spin and magnetic moment, magnetization and magnetic susceptibility. | 10 |
| Chapter No. 9 | Topics to be covered: Types of magnetic materials: diamagnetic, paramagnetic and ferromagnetic materials. B-H hysteresis curves. | 3 |
| Topics for self study(If any) | B-H curves and its characteristics Ferrites | |

| Suggested Activities | | |
|-----------------------------|---|--|
| Activity No.7 | <ol style="list-style-type: none"> 1. Prepare a small project report on production of magnetic field: Permanent magnets, electromagnets and superconducting magnets. 2. Learn the principle of working of a Gauss meter to measure magnetic field | |
| Activity No. 8 | <ol style="list-style-type: none"> 1. Model the earth's magnetic field with a diagram. Explain the effect of tilt of the earth's axis and reasons for the change in the tilt of the earth's axis over thousands of years. | |
| Activity No 9 | Identifying the magnetic meridian of the earth and measuring the magnetic dip at a place using the magnetic pointer. Discussion on magnetic equator | |

Text Books:

| Sl No | Title of the Book | Authors Name | Publisher | Year of Publication |
|--------------|---|----------------------|------------------|----------------------------|
| 1 | Physics for Degree Students Volume 1 | CL Aurora & PS Hemne | S.Chand & Co | 2010 |
| 2 | Fundamentals of Magnetism and Electricity | DN Vasudeva | S Chand & Co | 2011 |
| 3 | Electricity and Magnetism | R Murugesan | S Chand & Co | 2019 |
| 4 | Electricity and Magnetism | D C Tayal | Himalaya | 1989 |

References Books:

| Sl No | Title of the Book | Authors Name | Publisher | Year of Publication |
|--------------|--|--|---|----------------------------|
| 1 | Physics-Part-II, | David Halliday and Robert Resnick | Wiley Eastern Limited | 2001 |
| 2 | Berkeley Physics Course, Vol-2, Electricity and Magnetism, Special Edition | Edward M Purcell | Tata Mc Graw-Hill Publishing Company Ltd, New Delhi | 2008 |
| 3 | The Feynman Lectures on Physics – Vol II | Richard P Feynman, Robert B Leighton, Mathew Sands | Narosa Publishing House | 1986 |
| 4 | Physics for Scientists and Engineers | Jewett & Serway | Cengage learning India Pvt Ltd, Delhi | 2012 |
| 6 | Physics – (International Student Edition) | Marcelo Alonso & Edward J Finn | Addison – Wesley | 1999 |

List of Experiments to be performed in the Laboratory

| | |
|-----|---|
| 1. | Experiments on tracing of electric and magnetic flux lines for standard configuration. |
| 2. | Verification of Maximum Power Transfer Theorem. |
| 3. | Analysis of Phasor diagram. |
| 4. | Determination of capacitance of a condenser using B.G. |
| 5. | Determination of mutual inductance using BG. |
| 6. | Charging and discharging of a capacitor (energy dissipated during charging and time constant measurements). |
| 7. | Series and parallel resonance circuits (LCR circuits). |
| 8. | Impedance of series RC circuits- determination of frequency of AC. |
| 9. | Study the characteristics of a series RC and RL Circuit. |
| 10. | Determination of self inductance of a coil. |
| 11. | Verification of laws of combination of capacitances and determination of unknown capacitance using de - Sauty bridge. |
| 12. | Determination of B_H using Helmholtz double coil galvanometer and potentiometer. |
| 13. | Low pass and high pass filters. |
| 14. | Charge sensitiveness of BG. |
| 15. | Field along the axis of a coil. |
| 16. | Low resistance by potentiometer . |

(Minimum EIGHT experiments have to be carried out).

Reference Book for Laboratory Experiments

| Sl No | Title of the Book | Authors Name | Publisher | Year of Publication |
|-------|--|-------------------------------------|---|---------------------|
| 1 | Advanced Practical Physics for students | B.L. Flint and H.T. Worsnop | Asia Publishing House. | 1971 |
| 2 | A Text Book of Practical Physics | I. Prakash & Ramakrishna | Kitab Mahal, 11 th Edition | 2011 |
| 3 | Advanced level Physics Practicals | Michael Nelson and Jon M. Ogborn | Heinemann Educational Publishers, 4 th Edition | 1985 |
| 4 | A Laboratory Manual of Physics for undergraduate classes | D.P.Khandelwal | Vani Publications. | 1985 |
| 5 | BSc Practical Physics Revised Ed | CL Arora | S.Chand & Co | 2007 |
| 6 | An advanced course in practical physics | D. Chatopadhyay, PC Rakshit, B.Saha | New Central Book Agency Pvt Ltd | 2002 |

Question paper pattern for I and II Semester Examinations

Max. marks: 60

Part A

Answer any FOUR out of six questions. Each questions carry 2 marks. $4 \times 2 = 8$

- 1.
- 2.
- 3.
- 4.
- 5.
- 6.

Part B

$4 \times 10 = 40$

Answer **All** questions.

- 7a) One question from Unit I for 4 marks.
b) One question from Unit I for 6 marks.

OR

- 8a) One question from Unit I for 4 marks.
b) One question from Unit I for 6 marks.

- 9a) One question from Unit II for 4 marks.
b) One question from Unit II for 6 marks.

OR

- 10a) One question from Unit II for 4 marks.
b) One question from Unit II for 6 marks.

- 11a) One question from Unit III for 4 marks.
b) One question from Unit III for 6 marks.

OR

- 12 a) One question from Unit III for 4 marks.
b) One question from Unit III for 6 marks.

- 13a) One question from Unit IV for 4 marks.
b) One question from Unit IV for 6 marks.

OR

- 14a) One question from Unit IV for 4 marks.
b) One question from Unit IV for 6 marks.

Part C

Answer any THREE out of four questions (one PROBLEM from each unit). Each questions carry 4 marks. $3 \times 4 = 12$

- 15 (a)
(b)
(c)
(d)

Total Marks

= 60

Scheme of practical final examination (I and II semester)

Instructions:

- i) Minimum 8 experiments should be done (otherwise student is not allowed to sit for semester examination)
- ii) Knowledge of the experiment:-
 - Student knowledge is judged based on the performance of the handling equipments & recognising suitable devices used in the experiment. Questions must be asked to test basic knowledge of concerned the experiment only.

Marks allotment for practical

| Allotment of marks | I & II semesters |
|--------------------------------|------------------|
| Record book | 8 |
| Formula | 3 |
| Diagram/circuit, Exptal set up | 3 |
| Observation & trails | 6 |
| Knowledge of the experiment | 3 |
| Result & accuracy | 2 |
| Total marks | 25 |

OPEN ELECTIVES

(SEM I to II)

Open Elective 1

ENERGY SOURCES

Programme Outcomes

PO - 1 Discipline Knowledge: Knowledge of science and ability to apply to relevant areas.

PO - 2 Problem solving: Execute a solution process using first principles of science to solve problems related to respective discipline.

PO - 3 Modern tool usage: Use a modern scientific, engineering and IT tool or technique for solving problems in the areas of their discipline.

PO - 4 Ethics: Apply the professional ethics and norms in respective discipline.

PO - 5 Individual and teamwork: Work effectively as an individual as a team member in a multidisciplinary team.

PO - 6 Communication: Communicate effectively with the stake holders, and give and receive clear instructions.

Course Articulation Matrix: Mapping of Course Outcomes (COs) with Program Outcomes (POs)

Course Articulation Matrix: Mapping of Course Outcomes (COs) with Program Outcomes (POs)

Program Outcomes (POs)

| Course Outcomes (COs) | 1 | 2 | 3 | 4 | 5 | 6 |
|--|----------|----------|----------|----------|----------|----------|
| CO - 1: Will be able to comprehend the varieties of energy sources and differentiate between the renewable and non-renewable sources of energy | x | x | | | | |
| CO - 2: Will know the significance of solar energy and the different techniques to harness the solar energy | x | x | | | | |
| CO - 3: Will gain the idea of the formation of waves and standing wave pattern, analysis of longitudinal and transverse waves. | x | x | | | x | |
| CO - 4: Will acquire the knowledge of wind energy and the methods to tap the energy from the blowing wind to generate electrical power. | x | x | | x | | |
| CO - 5: Will come to know about the conventional energy sources and its impact on the climate | x | x | | | x | |

| | | | | | | |
|---|---|---|--|---|---|---|
| CO - 6: Will acquire the skill to set up a model to show the production of energy from different energy sources | x | | | | x | x |
| CO - 7: Will be able to explain the different energy sources and how they are beneficial for the development of Technology. | x | x | | | x | x |
| CO - 8: Will be able to understand the problems of global warming and other climatic impact of the reckless usage of energy resources | x | | | x | x | x |

Course Articulation Matrix relates course outcomes of course with the corresponding program outcomes whose attainment is attempted in this course. Mark 'X' in the intersection cell if a course outcome addresses a particular program outcome.

ENERGY SOURCES

| | | No. of lectures |
|----------------|---|-----------------|
| Unit-I | Non-Renewable energy sources | |
| | Chapter-1: Introduction | |
| | Energy concept-sources in general, its significance & necessity. Classification of energy sources: Primary and Secondary energy, Commercial and Non-commercial energy, Renewable and Non-renewable energy, Conventional and Non-conventional energy, Based on Origin-Examples and limitations. Importance of Non-commercial energy resources. | 04 |
| | Chapter-2: Conventional energy sources | |
| | Fossil fuels & Nuclear energy- production & extraction, usage rate and limitations. Impact on environment and their issues& challenges. Overview of Indian & world energy scenario with latest statistics- consumption & necessity. Need of eco-friendly & green energy & their related technology. | 09 |
| | Total | 13 |
| Unit-II | Renewable energy sources | |
| | Chapter-1: Introduction: | |
| | Need of renewable energy, non-conventional energy sources. An overview of developments in Offshore Wind Energy, Tidal Energy, Wave energy systems, Ocean Thermal Energy Conversion, solar energy, biomass, biochemical conversion, biogas generation, geothermal energy tidal energy, Hydroelectricity. | 05 |
| | Chapter 2 : Solar energy: | |
| | Solar Energy-Key features, its importance, Merits & demerits of solar energy, Applications of solar energy. Solar water heater, flat plate collector, solar distillation, solar cooker, solar green houses, solar cell -brief discussion of each. Need and characteristics of photovoltaic (PV) systems, PV models and equivalent circuits, and sun tracking systems. | 08 |
| | Total | 13 |

| | | |
|-----------------|--|-----------|
| Unit-III | Chapter-3: Wind and Tidal Energy harvesting: | |
| | Fundamentals of Wind energy, Wind Turbines and different electrical machines in wind turbines, Power electronic interfaces, and grid interconnection topologies. Ocean Energy Potential against Wind and Solar, Wave Characteristics and Statistics, Wave Energy Devices. Tide characteristics and Statistics, Tide Energy Technologies, Ocean Thermal Energy. | 07 |
| | Chapter-4 : Geothermal and hydro energy | |
| | Geothermal Resources, Geothermal Technologies. | 02 |
| | Hydropower resources, hydropower technologies, environmental impact of hydro power sources. | 03 |
| | Carbon captured technologies, cell, batteries, power consumption. | 01 |
| | Total | 13 |
| | Activity <ol style="list-style-type: none"> 1. Demonstration of on Solar energy and wind energy using training modules at Labs. 2. Conversion of vibration to voltage using piezoelectric materials. 3. Conversion of thermal energy into voltage using thermoelectric (using thermocouples or heat sensors) modules. 4. Project report on Solar energy scenario in India 5. Project report on Hydro energy scenario in India 6. Project report on wind energy scenario in India 7. Field trip to nearby Hydroelectric stations. 8. Field trip to wind energy stations like Chitradurga, Hospet and Gadag. 9. Field trip to solar energy parks like Yeramaras near Raichur. 10. Videos on solar energy, hydro energy and wind energy. | |
| | Reference Books: <ol style="list-style-type: none"> 1. Non-conventional energy sources - G.D Rai - Khanna Publishers, New Delhi 2. Solar energy - M P Agarwal - S Chand and Co. Ltd. 3. Solar energy - Suhas P Sukhative Tata McGraw - Hill Publishing Company Ltd. 4. Godfrey Boyle, "Renewable Energy, Power for a sustainable future", 2004, Oxford University Press, in association with The Open University. 5. Dr. P Jayakumar, Solar Energy: Resource Assessment Handbook, 2009 6. J.Balfour, M.Shaw and S. Jarosek, Photovoltaics, Lawrence J Goodrich (USA). 7. http://en.wikipedia.org/wiki/Renewable_energy | |

Astronomy & Space Mission

Programme Outcomes

PO - 1 Discipline Knowledge: Knowledge of science and ability to apply to relevant areas.

PO - 2 Problem solving: Execute a solution process using first principles of science to solve problems related to respective discipline.

PO - 3 Modern tool usage: Use a modern scientific, engineering and IT tool or technique for solving problems in the areas of their discipline.

PO - 4 Ethics: Apply the professional ethics and norms in respective discipline.

PO - 5 Individual and teamwork: Work effectively as an individual as a team member in a multidisciplinary team.

PO - 6 Communication: Communicate effectively with the stake holders, and give and receive clear instructions.

Course Articulation Matrix: Mapping of Course Outcomes (COs) with Program Outcomes (POs)

Course Articulation Matrix: Mapping of Course Outcomes (COs) with Program Outcomes (POs)

Program Outcomes (POs)

| Course Outcomes (COs) | 1 | 2 | 3 | 4 | 5 | 6 |
|---|---|---|---|---|---|---|
| CO – 1 : Will come to know the historical growth of Astronomy and the accumulation of knowledge. | x | x | | | | |
| CO – 2 : Will be able to understand the basic principle of optical instruments such as telescope, binoculars. | x | x | | | | |
| CO – 3 : Will acquire the skills to set up the telescope and recognize the star clusters and also the planets and satellites. | x | x | | | x | |
| CO- 4 : Will acquire the knowledge of wind energy and the methods to tap the energy from the blowing wind to generate electrical power. | x | x | x | | | |
| CO – 5 : Will come to know about the conventional energy sources and its impact on the climate | x | x | | | x | |
| CO-6 : Will be able to explain the stellar evolution and evolution of the universe. | x | | | | x | x |

| | | | | | | |
|---|---|---|--|---|---|---|
| CO- 7 : Will be able to explain the principle of Rocket launching and other space machines. . | x | x | | | x | x |
| CO-7 : Will know the Indian Space program and its contribution for the nation building. | x | | | x | x | x |

Course Articulation Matrix relates course outcomes of course with the corresponding program outcomes whose attainment is attempted in this course. Mark 'X' in the intersection cell if a course outcome addresses a particular program outcome.

Astronomy & Space Mission

| Topic | Hours |
|---|-----------|
| Unit 1: History & Introduction | 13 |
| Ancient Astronomy Vedic Astronomy, Ancient Astronomy – Aryabhata, Varahamihira, Bhaskara Greek, Sumerian, Mayan, Egyptian, Arabic and Chinese Observations | 3 |
| Medieval Astronomy: Geocentric Model, Heliocentric Model Observations by Tycho Brahe, Kepler, Galileo, Herschel and others. | 3 |
| Tools for Astronomy: Invention of Telescopes Pin Hole, Binoculars, Telescopes & Imaging. | 3 |
| Modern Astronomy Hubble's discovery, Stellar Evolution (Brief), Microwave, Radio Telescopes | 2 |
| Observational Terminologies Cardinal Directions, Azimuth, Altitude, Measurements using Compass and Hand. Equatorial Co-ordinates, Light years, Magnitude, Colors. | 2 |
| Unit 2: Observational Astronomy | 13 |
| The Sun Ecliptic and the Orientation of the Earth, Seasons - Solstices and Equinox, Observations of the Sun from Earth during seasons. Zero-shadow day Sunspots. | 2 |
| The Moon Earth-Moon system – Phases, Lunar Eclipses, Ecliptic and Lunar Orbital Plane – Nodes, Lunar Month, Full Moon Names. | 2 |

| | |
|---|-----------|
| <p>Inner Planets: Mercury & Venus Observational History, Observational Windows, Appearance, Apparitions, Elongations, Superior Conjunctions, Inferior Conjunctions, Transits.</p> <p>Outer Planets: Mars, Jupiter & Saturn Observational History, Observational Windows, Appearance, Frequency of Oppositions, Conjunctions, Galilean Moons, Saturn's Rings</p> <p>Distant or Minute Objects: Uranus, Neptune & Asteroids Observational History, Observational Windows, Asteroid Belt, Prominent Asteroids.</p> | 5 |
| <p>Comets & Meteors Origin, Orbital Nature, Historical Observations, Prominent Comets and Asteroids., Meteors, Origins and Showers</p> | 2 |
| <p>Occultations, Transits and Eclipses Definitions, Prominent Occultations and Transits, Eclipses – Types and prominent occurrences. Famous Eclipses in the past.</p> | 2 |
| Unit 3: Space Missions | 13 |
| <p>Introduction to Space Missions: Rockets, types and their applications, Different types of orbits, Artificial satellites – basic idea and their applications, Introduction to Space Missions, Beginning of Space Missions - World and India, Applications of Space Research, Space crafts, Launching Vehicles.</p> <p>Topics for Self-study: Major Space Centres in the World (at least 10) – brief idea about their location, establishment, capabilities and achievements. People behind space programs – at least 2 from India. Successful Missions (Any Five).</p> | 6 |
| <p>Indian Space Research Organisation (ISRO): About ISRO and its Goals, History of Creation.</p> <p>General Satellite Programmes: The IRS series, The INSAT series. Gagan Satellite Navigation System, Navigation with Indian Constellation (NavIC), Other satellites.</p> <p>Launch vehicles: Satellite Launch Vehicle (SLV), Augmented Satellite Launch Vehicle (ASLV), Polar Satellite Launch Vehicle (PSLV), Geosynchronous Satellite Launch Vehicle (GSLV).</p> <p>Experimental Satellites: Details and applications (Any Five)</p> <p>Earth Observation Satellites: Details and applications (Any Five)</p> <p>Communication satellites: Details and applications (Any Five)</p> <p>Topics for Self study: Chandrayaan 1: Details and applications. Mars Orbiter Mission: Details and applications.</p> | 7 |

References:

| Sl No | Title of the Book | Authors Name | Publisher | Year of Publication |
|-------|---|--------------------------------------|----------------------------|---------------------|
| 1 | The Amateur Astronomer | Sir Patrick Moore | Springer | 2006 |
| 2 | Handbook of Practical Astronomy | Gunter D. Routh | Springer | 2009 |
| 3 | Fundamental Astronomy | Hannu Karttunen | Springer | 2007 |
| 4 | Guide to Night Sky | P. Shankar | KRVP | 2007 |
| 5 | The Complete Idiot's Guide to Astronomy | Christopher De Pree and Alan Axelrod | Pearson | 2001 |
| 6 | The story of Astronomy In India | Chander mohan | Research Gate | 2015 |
| 7 | Trigonometry | - | Inc. BarCharts | |
| 8. | Stargazing for Dummies | Steve Owens | John Wiley & Sons | 2013 |
| 9. | A Skywatcher's Year | Jeff Kanipe | Cambridge University Press | 1999 |
| 10. | The Casual Sky Observer's Guide | Rony De Laet | Springer | 2012 |
| 11. | https://www.isro.gov.in/ | | | |

Question paper pattern for Open Elective for I and II Semester

Internal Assessment: 40 marks

Semester Examination: 60 marks

UNIT I, II & III Internal choice for each unit

Questions carrying $1 \times 8 = 8$

$1 \times 7 = 7$

$1 \times 5 = 5$

Total $20 \times 3 = 60$

ಮಂಗಳೂರು
MANGALORE



ವಿಶ್ವವಿದ್ಯಾನಿಲಯ
UNIVERSITY

ಕ್ರಮಾಂಕ/ No. : MU/ACC/CR.23/2021-22/A8

ಕುಲಸಚಿವರ ಕಛೇರಿ

ಮಂಗಳಗಂಗೋತ್ರಿ - 574 199

Office of the Registrar

Mangalagangothri - 574 199

ದಿನಾಂಕ/Date: 21/01/2022

NOTIFICATION

Sub: Syllabus of Economics as a core subject for B.A Degree
Programme Prepared as per NEP 2020-reg

Ref: Decision of the Academic Council meeting dated: 17.12.2021.

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Pursuant to the above, the syllabus of Economics as a core subject for B.A Degree Programmes prepared as per model curriculum of NEP 2020 is hereby notified for implementation with effect from the academic year 2021-22.

Copy of the Syllabus can be downloaded from the Mangalore University website. [www.mangaloreuniversity.ac.in](http://www.mangaloreuniversity.ac.in)

**(Draft approved by the Registrar)**

  
For REGISTRAR.

To:

- 1) The Principals of the Colleges concerned.
- 2) The Registrar (Evaluation), Mangalore University.
- 3) Dr. Vishwanatha, Chairman, UG BOS in Economics & Chairman, PG Dept. of Economics, Mangalore University.
- 4) The Assistant Registrar/The Superintendent, Academic Section, O/o the Registrar, Mangalore University.
- 5) The Director, DUIMS, Mangalore University - with a request to publish in the Website.
- 6) Guard File.

National Education Policy 2020(NEP2020)

**Syllabus of Four Years BA Economics (Honors)**

**I and II Semester**

**Prepared and Approved**

**By**

**Board of Studies (UG),**

**Dept of Economics**

**Mangalore University**

**November 2021**



## **PREAMBLE**

Education empowers Mankind. A holistic education paradigm will effectively focus on developing knowledge, employable skill sets, appropriate attitudes and an overall personality. NEP is focused towards imparting such an education system.

India's first education policy of the 21st century is 'National Education Policy 2020' proposes the revision and revamping of all aspects of the education structure, including its regulation and governance. It seeks to create a new system that is aligned with the developmental aspirations & goals of 21st century education, including SDG4, while building upon India's traditions and value systems.

NEP aims for India to have an education system by 2040 that is second to none, with equitable access to the highest-quality education for all learners regardless of social or economic background and seeks to *“ensure inclusive and equitable quality education and promote lifelong learning opportunities for all” by 2030.*”

### **Vision of the National Education Policy 2020**

- ✓ An education system that contributes to an equitable and vibrant knowledge society, by providing high-quality education to all.
- ✓ Develops a deep sense of respect towards the fundamental rights, duties and Constitutional values, bonding with one's country, and a conscious awareness of one's role and responsibilities in a changing world.
- ✓ Instils skills, values, and dispositions that support responsible commitment to human rights, sustainable development and living, and global well-being, thereby reflecting a truly global citizen.

As India is enjoying the demographic dividend, which will last till 2055 and to reap the benefits, a good education policy was the need of the hour. Hence there is lot of hopes on the NEP, which has come as cure the edu-ailments and top lug the shortcomings of the education system which marred for 36 years and strengthen our education system. Expectations on NEP is high. As every good policy success lies in the implementation and active participation of its stake holders, so is the NEP. The success or failure of NEP lies in all our hands. Hence Let all of us join our hands in making the NEP successful.

As enshrined in the National Education Policy-2020 vision of introducing course curriculum for undergraduate studies under Choice Based Credit System (CBCS), the main objective of framing this curriculum of BA/B.Sc.(Basic/Hons) in Economics is to impart the students a holistic understanding of the subject giving substantial weight age to the core contents, skill, value-based and ability enhancement. The syllabus has given due importance on the main streams of the body of knowledge on Economics” with due recognition of its wide spectrum. The ultimate goal of the syllabus is to enable the students to have an in-depth knowledge on the subject and enhance their scope of employment at every level of exit. Adequate emphasis has been given on then wand emerging techniques and understanding of the subject under the changing regime and global context.

There is a need to strengthen the students to understand essential aspects of economics in diverse subject areas not only in social sciences, but also among other natural and physical sciences. The curriculum lays focus on creating new knowledge, acquiring new skills and capabilities in Economics producing an intelligent human resource serving the Economy and society

## PREFACE

The course curriculum for undergraduate studies under choice-based credit system (CBCS) for BA/B.Sc. in Economics (Basic/ Hons) is framed in this document. As a first step the first and second semester Syllabus and the entire course structure is prepared in this document. This exercise was undertaken as part of the nationwide curriculum restructuring initiative by the National Educational Policy-2020. Many online and offline meetings both formal and informal meetings were held by the committee taking the inputs from number of colleagues from the universities and colleges, who helped with crucial inputs as to the content of the course. This curriculum is a fresh exercise, but also represents a continuous effort of deliberations with various stakeholders.

A graduate is the one who acquires skills of identifying a problem and factors responsible for the problem; acquires and appreciates problem-solving skills; logically employs problem solving tools, spatially and temporally; identifies timely needs of the community and contributes to them; takes the community together creating an equitable ecosystem; works towards creating employment opportunities and work domains for different skill sets and knowledge disciplines; blends with various social and economic situations making life happier for the self and of the communities; envisages and employs various attitudes and skill sets for the betterment of the Nation, blending local and regional variations and utilizes them to benefit the economy.

Economics is a domain which seamlessly connects the sciences with day-to-day economic demands of the people and policy making issues of the Government. Proposing and developing a curriculum for the subject of Economics is unique in many ways. Hence, a competent subject expert committee was constituted by Karnataka State Higher Education Council, Government of Karnataka. The assigned task of this committee was to design a model curriculum structure and syllabus for both undergraduate and post graduate programmes of Economics.

Due efforts are taken to incorporate subject matter that seeks to create students with the ability of the problem-solving critical thinking, analytical thinking, model building, doing estimations, team work and collaboration etc. It is hoped that a student after a rigorous training in the BA/B.Sc. Economics (Hons) degree will have host of employment opportunities and will be an asset to the nation.

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| Sl. No. | Details                                                               | P.No. |
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| 3       | Need for Curriculum Framework Development                             |       |
| 3       | Pedagogy                                                              |       |
| 4       | Exit Options and Credit Requirements                                  |       |
| 5       | Continuous Internal Evaluation and Semester End Examination           |       |
| 6       | Suggestive Template for IAT                                           |       |
| 7       | Course Structure for BA and BA Honours and MA with exit options       |       |
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| 9       | Syllabus for first two Semesters of BA and BA Honours                 |       |
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## EXECUTIVE SUMMARY

Economics is the study to understand the ways to make accurate choices. By studying economics one can make the efficient choices in managing scarce resources such as money and time. It is not only helpful to increase the standard of living of the individual and their households and also in the policy decisions for the economic development of the Nation. Overall, the objective of Economics is to improve well-being of Indians and thereby developing Indian Economy, since it serves as a centre for developing ideas and innovations.

The economic graduates will be trained to make the best choices among these seemingly infinite possibilities. These rigourously trained economists will play a vital role in the Economic Development of the nation.

The implementation of NEP 2020 has given the great opportunity to make the structure and syllabus of Economics more dynamic and rigorous. Hence the Curriculum committee in Economics has prepared the model structure and syllabus for the first two semesters as the first step towards it.

The committee though has taken the confidence and suggestions of the BOS chairpersons of all the state Universities as it is reiterated that the complete autonomy to the respective BOS of the Universities/Institutes remains intact even as per HEC. The committee has identified different category of courses to be studied by the **Economics Students namely Discipline Specific Core Course (DSCC), Ability Enhancement Courses (AECC), Skill Enhancement Courses (SEC),GE(Generic Electives), Discipline Specific Electives (DSE) etc., by keeping wide choices by considering the present context.**

The members of the committee strongly felt that rigorous training, continuous assessment is the key to improve the quality of the economics students and the fellow fraternity members should leave no stone unturned to ensure it in total.

## **Introduction**

Economics is a popular and much sought-after course owing to its policy relevance and application to business as well as real life situations. However, in the conventional graduate programmes, Economics education was more class-room based with very less practical orientation. Further, with changing technology, emergence of newer issues like uncertainty, pandemics, climate change and business data analytics; the skill requirements are changing. New business models demand newer skills to successfully manage the change. Therefore, keeping in mind the aspirations of the NEP, the emerging skill matrix and the progression of the student at various levels, the Curriculum Committee of Economics finalized the following programme structure to be taught for BA/B.Sc. (Basic and Honors).

### **Program Outcome**

The four-year Bachelor of Arts and Science (B.A./B.Sc Basic/Honors) in Economics programme in economics is designed with option for multiple entry and exit. The students will be taught theory as well as the practical aspects of Economic Science. They would begin with fundamental concepts and then as they progress to higher semesters they would be introduced to more sophisticated and intricate concepts.

The main focus would be on conceptual clarity and practical usage of the knowledge gained. To make the students to ‘think like an economist’ is the main motto of the curriculum. They will also be exposed to quantitative approaches and tools to understand the economic relationships and also to analyse the data for framing as well as evaluating socio-economic policies. With varied electives and approaches to study socio-economic problems and policies, the graduates will be prepared to review and evaluate policies. The whole process aims at making them more inquisitive about the economic phenomena. After graduation, the students can apply their knowledge, skills and competencies across a broad range of occupations. They enjoy a rewarding career in academic, business, corporate, science, health care, government, or any field that uses the information to answer critical questions and inform decision-making.

### **Learning Objectives**

The Graduates will demonstrate:

- ✓ Knowledge of the principles, methodologies, value systems, and thought processes employed in understanding economic behavior of human beings;
- ✓ Ability to solve problems in microeconomics and macroeconomics;

- ✓ Understanding of contemporary economic issues and the impact of public and social policies to resolve them;
- ✓ Understanding of markets and how they function;
- ✓ Ability to identify, formulate and solve problems related to global, national and local socio-economic development.
- ✓ Ability to design and conduct Social and Behavioral experiments;
- ✓ Ability to design Questionnaires and other Survey tools.
- ✓ Ability to structure and analyse economic data with statistical tools, software and equipment;
- ✓ Ability to critically evaluate academic and policy research in economics;
- ✓ Ability to visualize and work on multidisciplinary tasks;
- ✓ Knowledge of professional and ethical responsibilities;
- ✓ Ability to communicate effectively in both verbal and written form;
- ✓ Confidence for self-education and ability for life-long learning.
- ✓ Participation and success in competitive examinations like UPSC/KPSC Civil Services, Indian Economic Services etc.;
- ✓ Ability to prepare and understand simple financial statements

### **Program Outcomes**

The Programme outcomes (POs) are expected to be as under:

- Students will be able to understand economic vocabulary, methodologies, tools and analysis procedures.
- Students will be familiar with the knowledge and application of micro economics for the formulation of policies and planning.
- Students will learn to apply economic theories and concepts to contemporary social issues, as well as analysis of policies.
- Students will be able to understand the impact of government policies and will be able to assess the consequences of the policies on the parties involved.
- As the programme along with economics contains like statistics, mathematics, it enhances them to compute and assess the real situation of the economy including the size and changes of population, income pattern, and rate of development with pattern of savings and investments and social security measures adopted in the country.
- Understand the basics of Quantitative techniques their applications

- Critically evaluate the on going economic developments in India and abroad
- **Understand research methods in economics**
- Student develops an awareness of career choices and the option for higher studies.

### **NEED FOR CURRICULUM DEVELOPMENT**

As per the NEP 2020 initiatives, it is intended to formulate Curriculum to eliminate the disparities among the students studying in different Universities/Institutes. The need for the curriculum development in Economics emerges due to the following reasons

1. **Changing Economic Scenario;** The Indian Economy is witnessing a radical amount of the changes in the economic policies since the introduction of the New Economic policy in 1991, followed by second and third generation reforms. India is not only inviting the FDI but at the same time also promoting Atmanirbhar Abhiyaan (A Self-reliant India).Market economy has expanded creating new opportunities and hence a new economics curriculum is prepared which helps the student to utilize the emerging.
2. **Credit transfer:** Credit transfer is approved by the UGC and the Government that allows the allows students to transfer course from their existing university to a new UGC approved university. The same number of credits in all the Universities in Karnataka is the first step to towards the credit transfer from University to University.
3. **Different Syllabus for BA and BSC in Economics:** All these years the BA and BSC in Economics had the same syllabus and as a path breaking the committee has prepared the separate syllabus for BA and BSC in Economics which suits to the needs of the changing time.
4. **Skill Enhancement:** The new curriculum focuses more on hands on training, internship and thereby enhancing the skills of the students. The papers like data **analytics etc further helps to develop the skills in the students.**



## PEDAGOGY

The goal of economics pedagogy is to awaken a student's critical consciousness and empower them with economic tools that help them in taking the crucial decision which helps them with economic tools through which they can make the efficient choices in managing scarce resources such as resources, money and time.

1. **Importance to theory as well as application:** all these years economics curriculum was concentrating more on teaching theoretical aspects, but the new curriculum gives importance to application through many hands-on training, case studies, empirical studies etc.
2. **Utilisation of ICT:** in order to make the Critical and creative thinking among the students better the ICT tools will be used. It includes case studies of research-led teaching, via presentations, websites and other media
3. **Research-based and research –led teaching:** The theories will be explained with application. In order to give more hands-on training, the Projects and internships are introduced in the economics curriculum. The students will do the research project of their choice under the supervision of the research guide.
4. **Exposure to Mathematics and Statistics :** in today's world, economics is using more of Statistics and Mathematics in economic analysis. Hence the curriculum is designed in such a way which gives more exposure to Mathematics and Statistics training.
5. **Brain Storming Approach:** Students will be deliberately involved either in groups or as individuals to deliberately discuss the possible implications or solutions to the Indian economic problems. The teacher will guide the process and help the students to think in right perspective and direction. This will help the teachers understand the extent of the student understanding and take corrective steps, but also helps in student involvement in the curriculum.
6. **Prominence to Indian economic contribution and Indian examples;** The western economic theories were taught ignoring the contribution of Indian economists. The new curriculum also emphasises on the Indian economist contribution, their theories and application. The teachers may highlight the Indian economic contribution and Indian examples in the pedagogy.

### Exit Options and Credit Requirements

A Certificate/Diploma/Bachelor Degree or Bachelor Degree with Honours in Economics both in BA/B.Sc.in Economics is awarded at the completion of every progressive year.

| Exit Option with                                                                                                         | Certificate/Diploma/Degree/<br>Honors                     |
|--------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------|
| Successful completion of First year (two semesters) of the four years multidisciplinary undergraduate degree programme.  | Certificate in Economics (Arts/Science)                   |
| Successful completion of second year (four semesters) of the four years multidisciplinary undergraduate degree programme | Diploma in Economics (Arts/Science)                       |
| Successful completion of three year (six semesters) of the four years multidisciplinary undergraduate degree Programme   | Bachelor of Arts/Science Degree in Economics              |
| Successful completion of four year (eight semesters) of the four years multidisciplinary undergraduate degree Programme  | Bachelor of Arts/ Science Degree with Honors in Economics |
| Successful completion of Five year (Ten semesters) of the Five years multidisciplinary degree programme                  | Master of Arts/ Science Degree With Honors in Economics   |

A student will be allowed to enter/re-enter only after the odd semester and they can only exit after even semester. Re-entry at various as lateral academic programmes based on the above mentioned earned proficiency test records.

The validity of the earned credit will be for a maximum period year or as specified by the academic bank of credits (ABC).

### CONTINUOUS INTERNAL EVALUATION AND SEMESTER END EXAMINATION

Total marks for each course shall be based on continuous assessments and term end examinations. As per the decision of the Karnataka State Higher Education Council, it is necessary to have uniform pattern of 40: 60 for CIA and Semester End examinations respectively, among all the Universities, their affiliated and autonomous colleges. The committee deliberated on the same and suggested the following pattern for the CIE Marks.

| Sl.No.                                     | Parameters for the Evaluation              | Marks           |
|--------------------------------------------|--------------------------------------------|-----------------|
| <b>Continuous Internal Evaluation(CIE)</b> |                                            |                 |
| A                                          | Continuous & Comprehensive Evaluation(CCE) | <b>20Marks</b>  |
| B                                          | Internal Assessment Tests(IAT)             | <b>20Marks</b>  |
|                                            | Total of CIE(A+B)                          | <b>40Marks</b>  |
| C                                          | Semester End Examination (SEE)             | <b>60Marks</b>  |
|                                            | <b>Total of CIE and SEE(A+B+C)</b>         | <b>100Marks</b> |

**Evaluation process of IA marks may be as follows:**

- The first component (C1), of assessment is for 20 marks. This shall be based on test, assignment, seminar, case study, field work, project work etc. This assessment and score process should be completed after completing 50% of syllabus of the course/s and with in the first half of the semester.
- The second component (C2), of assessment is for 20 marks. This shall be based on test, assignment, seminar, case study, field work, internship / industrial practicum / project work etc. This assessment and score process should be based on completion of the remaining 50 percent of syllabus of the courses of the semester.
- During the 17<sup>th</sup> – 20<sup>th</sup> week of the semester, a semester end examination of 3 hours duration shall be conducted by the University for each course. This forms the third and final component of assessment (C3) and the maximum marks for the final component will be 60%.
- In case of a student who has failed to attend the C1 or C2 on a scheduled date, it shall be deemed that the student has dropped the test. However, in case of a student who could not take the test on scheduled date due to genuine reasons, such a candidate may appeal to the concerned teacher/ Program Coordinator / HOD and suitable decision taken accordingly.
- For assignments, tests, case study analysis etc., of C1 and C2, the students should bring their own answer scripts (of A4 size), graph sheet etc., required for such tests/assignments and these be stamped by the concerned department using their department seal at the time of conducting tests/ assignment/work etc.

The outline for continuous assessment activities for Component-I(C1) and Component II(C2) of a course shall be as under:

Outline for continuous assessment activities for C1 and C2

| Activities                                                                                                     | C1             | C2              | Total Marks |
|----------------------------------------------------------------------------------------------------------------|----------------|-----------------|-------------|
| Session Test                                                                                                   | 10marks        | 10marks         | 20          |
| Seminars etc.                                                                                                  | 10marks        |                 | 10          |
| Case study / Assignment<br>/Field work / Project<br>work/Academic Economics<br>Quiz/Review of the Book/<br>etc |                | 10marks         | 10          |
| <b>Total</b>                                                                                                   | <b>20marks</b> | <b>20 marks</b> | <b>40</b>   |

Suggestive Template for Semester- end Examination BA in Economics

Course Code:  
Duration: 3 Hours

Name of the Paper:  
Total Marks: 60

**SECTION-A**

Answer any five questions out of eight questions given below. (Questions for testing conceptual clarity)  
(2X5=10)

- 1.
- 2.
- 3.
- 4.
- 5.
- 6.
- 7.
- 8.

**SECTION-B**

Answer any four of the following out of six questions given below. (Questions for testing the knowledge of theories and application)  
(5X4=20)

- 9.
- 10.
- 11.
- 12.
- 13.
- 14.

### **SECTION-C**

Answer any three of the following out of five questions given below. (Questions for testing the critical ability of understanding)

(10X3=30)

- 15.
- 16.
- 17.
- 18.
- 19.

### **Suggestive Template for IAT**

Internal Assessment Test BA in Economics

Course Code:

Name of the Paper:

Duration:90Minutes

Total Marks: 35

### **SECTION-A**

Answer any two of the following questions. Questions for testing conceptual clarity)

(5X2=10)

- 1.
- 2.
- 3.

### **SECTION-B**

Answer any one of the following questions. (Questions for testing the knowledge of theories and application)

(10X1=10)

- 5.
- 6.

### **SECTION-C**

Answer any one of the following questions. Questions for testing the critical ability of understanding)

(15X1=15)

- 7.
- 8

## **Structure of BA Honors In Economics**

## Acronyms Expanded

|                  |                                                  |
|------------------|--------------------------------------------------|
| <b>AECC</b>      | Ability Enhancement Compulsory Course            |
| <b>DSCC</b>      | Discipline Specific Core Course                  |
| <b>SEC/SB/VB</b> | Skill Enhancement Course-Skill Based/Value Based |
| <b>OEC</b>       | Open Elective Course                             |
| <b>DSE</b>       | Discipline Specific Elective                     |

## B.A PROGRAM

### Proposed Scheme of Teaching and Evaluation for B.A(Hons) with Economics as Major

| Semester-I |                          |                                                                                                               |                     |                                 |     |     |             |         |
|------------|--------------------------|---------------------------------------------------------------------------------------------------------------|---------------------|---------------------------------|-----|-----|-------------|---------|
| Sl No.     | Course Code              | Title of Course                                                                                               | Category of Courses | Teaching Hours per Week (L+T+P) | SEE | CIE | Total Marks | Credits |
| 1          | Economics-C1             | Basic Economics-I                                                                                             | DSC                 | 3+0+0                           | 60  | 40  | 100         | 3       |
| 2          | Economics-C2             | Contemporary Indian Economy                                                                                   | DSC                 | 3+0+0                           | 60  | 40  | 100         | 3       |
| 3          | Open Electives-Economics | 1. Kautilya's Arthshastra<br>2. Pre-reforms Indian Economy<br>3. Development Studies<br>4. Business Economics | OEC                 | 3+0+0                           | 60  | 40  | 100         | 3       |
| Sub-Total  |                          |                                                                                                               |                     |                                 |     |     |             | 09      |

| Semester – II                            |                          |                                                                                                                               |                     |                                 |     |     |             |         |
|------------------------------------------|--------------------------|-------------------------------------------------------------------------------------------------------------------------------|---------------------|---------------------------------|-----|-----|-------------|---------|
| Sl No.                                   | Course Code              | Title of the Course                                                                                                           | Category of Courses | Teaching Hours per Week (L+T+P) | SEE | CIE | Total Marks | Credits |
| 1                                        | Economics-C3             | Basic Economics-II                                                                                                            | DSC                 | 3+0+0                           | 60  | 40  | 100         | 3       |
| 2                                        | Economics-C4             | Karnataka Economy                                                                                                             | DSC                 | 3+0+0                           | 60  | 40  | 100         | 3       |
| 3                                        | Open Electives-Economics | 1. Contemporary Indian Economy<br>2. Sustainable Development<br>3. Economics of Business Environment<br>4. Monetary Economics | OEC                 | 3+0+0                           | 60  | 40  | 100         | 3       |
| Sub-Total                                |                          |                                                                                                                               |                     |                                 |     |     |             | 09      |
| Exit option with Certificate (48Credits) |                          |                                                                                                                               |                     |                                 |     |     |             |         |



### List of Open Electives

| Semester | Open Elective Papers                                                                                                           |
|----------|--------------------------------------------------------------------------------------------------------------------------------|
| I        | 7. Kautilya's Arthshastra<br>8. Development Studies<br>9. Pre-Reforms Indian Economy<br>10. Business Economics                 |
| II       | 7. Contemporary Indian Economy<br>8. Sustainable Development<br>9. Economics of Business Environment<br>10. Monetary Economics |

SYLLABUS FOR FIRST TWO SEMESTERS  
OF BA HONORS IN ECONOMICS

**BA (Hons) Economics**  
**Semester1**

**DSC1.2: Basic Economics–I (Economic Analysis -I) 3credits**

**Course Outcomes:**

By the end of the course the student will be able to:

1. Identify the facets of an economic problem.
2. Learn basic economic concepts and terms.
3. Explain the operation of a market system;
4. Analyse the production and cost relationships of a business firm;
5. Evaluate the pricing decisions under different market structures; and
6. Use basic cost-benefit calculations as a means of decision making (i.e., thinking like an economist)

| <b>Content of Basic Economics1</b>                                                                                                                                                                                                                                    | <b>42 Hrs</b> |
|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------|
| <b>Unit– 1 Basic Concepts in Economics</b>                                                                                                                                                                                                                            | <b>14</b>     |
| <b>ChapterNo.1Nature and Scope of Economics</b> <ul style="list-style-type: none"> <li>• Meaning of Economics</li> <li>• Nature of Economics</li> <li>• Scope of Economics</li> <li>• Methods of Economics</li> <li>• Why Study Economics?</li> </ul>                 | <b>5</b>      |
| <b>ChapterNo.2Role of an Economist</b> <ul style="list-style-type: none"> <li>• Thinking Like an Economist</li> <li>• The Economist as Scientist</li> <li>• The Economist as Policy Adviser</li> <li>• Economic Policy</li> </ul>                                     | <b>4</b>      |
| <b>ChapterNo.3EconomicSystem</b> <ul style="list-style-type: none"> <li>• Types of Economic Activities</li> <li>• Organisation of Economic Activities</li> <li>• Circular Flow of Economic Activities</li> <li>• Evolution of the Present Economic Systems</li> </ul> | <b>5</b>      |
| <b>Practicum:</b> 1.Group Discussions on Choice Problem<br>2.Assignmenton Types of Economic Systems                                                                                                                                                                   |               |
| <b>Unit – 2 Demand, Supply and Markets</b>                                                                                                                                                                                                                            | <b>14</b>     |

|                                                                                                                                                                                                    |   |
|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---|
| <b>Chapter No. 4. Firms and Household</b>                                                                                                                                                          |   |
| <ul style="list-style-type: none"> <li>• Meaning of Firms and Household</li> <li>• Relationship Between Firms and Household</li> <li>• Input Markets</li> <li>• Output Markets</li> </ul>          | 4 |
| <b>Chapter No.5.Demand and Supply</b>                                                                                                                                                              | 5 |
| <ul style="list-style-type: none"> <li>• Individual Demand</li> <li>• Market Demand</li> <li>• Demand Determinants</li> <li>• Supply and its Determinants</li> <li>• Market Equilibrium</li> </ul> |   |

|                                                                                                                                                                                                                                                                                                                            |    |
|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----|
| <b>Chapter No.6.Elasticity and its Measurement</b>                                                                                                                                                                                                                                                                         | 5  |
| <ul style="list-style-type: none"> <li>• Types of Elasticity of Demand</li> <li>• Price, Income and Cross Elasticities</li> <li>• Measurement of Elasticity of Demand</li> <li>• Determinants of Elasticity of Demand</li> </ul> <b>Practicum:</b> 1.Estimation of demand elasticities<br>2.solving an equilibrium problem |    |
| <b>Unit –3Cost and Market Structures</b>                                                                                                                                                                                                                                                                                   | 14 |
| <b>Chapter No. 7 Production and Costs</b>                                                                                                                                                                                                                                                                                  | 4  |
| <ul style="list-style-type: none"> <li>• Production Function</li> <li>• Total Production Cost</li> <li>• Marginal Production Cost</li> <li>• Average Production Cost</li> <li>• Revenue Functions</li> </ul>                                                                                                               |    |
| <b>Chapter No.8.Cost and Revenue Analysis</b>                                                                                                                                                                                                                                                                              | 5  |
| <ul style="list-style-type: none"> <li>• Cost in the Short run</li> <li>• Fixed Costs and Variable Costs</li> <li>• Marginal Costs</li> <li>• Long run and MC</li> <li>• TR,MR, AR</li> </ul>                                                                                                                              |    |
| <b>Chapter No.9.Types Markets</b>                                                                                                                                                                                                                                                                                          | 5  |
| <ul style="list-style-type: none"> <li>• Markets</li> <li>• Perfect and Imperfect Competition</li> <li>• Features of Perfect Competition</li> <li>• Monopoly, Oligopoly and Monopolistic Competition</li> <li>• Pricing Strategies</li> </ul>                                                                              |    |
| <b>Practicum:</b> 1. Calculation of various costs and comparing them with production concepts; a mini-project can be taken up wherever possible<br>2.Studying the real-life pricing mechanism through a project/case studies                                                                                               |    |
| <b>References(indicative)</b>                                                                                                                                                                                                                                                                                              |    |
| 1. Cohen, A.J. (2020). <i>Macroeconomics for Life: Smart Choices for All? + My Lab Economics with Pearson e Text</i> (updated 2 <sup>nd</sup> ed.). Toronto,ON:PearsonCanadaInc.Type:Textbook:ISBN:9780136716532                                                                                                           |    |
| 2. Cohen, A.J. (2015). <i>Microeconomics for Life: Smart Choices for You + My Lab Economics with Pearson e Text</i> (2 <sup>nd</sup> ed.). Toronto, ON: Pearson Canada Inc.Type:Textbook:ISBN:9780133899368                                                                                                                |    |
| 3. Case Karl E. and Fair Ray C. Principles of Economics, Pearson Education Asia,2014.                                                                                                                                                                                                                                      |    |
| 4. MankiwN.Gregory.PrinciplesofEconomics,Thomson,2013.                                                                                                                                                                                                                                                                     |    |
| 5. Stiglitz J.E. and Walsh C.E. Principles of Economics, W.W. Norton & Co, NewYork, 2011.                                                                                                                                                                                                                                  |    |

## Semester I

|                                                         |                             |
|---------------------------------------------------------|-----------------------------|
| Course Title: <b>DSC1.3:Contemporary Indian Economy</b> |                             |
| Total Contact Hours:42                                  | Course Credits:3            |
| Formative Assessment Marks:40                           | Duration of ESA/Exam: 3 Hrs |
| Model Syllabus Authors:                                 | SummativeAssessmentMarks:60 |

### Course Pre-requisite(s):

### Course Outcomes (COs):

At the end of the course the student should be able to:

- i. Understand the current problems of Indian Economy
- ii. Identify the factors contributing to the recent growth of the Indian economy
- iii. Evaluate impact of LPG policies on economic growth in India
- iv. Analyze the sector specific policies adopted for achieving the aspirational goals
- v. Review various economic policies adopted

| Content of Course1                                                                                                                                                                                                                                                                                                                                              | 42 Hrs |
|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------|
| <b>Unit–1 ECONOMIC REFORMS AND AGRICULTURE</b>                                                                                                                                                                                                                                                                                                                  | 14     |
| <b>Chapter No.1 Recent Issues</b> <ul style="list-style-type: none"> <li>• Genesis and Impact of new Economic policy</li> <li>• India's population policy</li> <li>• Demographic Dividend</li> <li>• India's human development in global perspective</li> </ul>                                                                                                 | 4      |
| <b>Chapter No.2 Urbanization and governance</b> <ul style="list-style-type: none"> <li>• Urbanization and Smart City Mission</li> <li>• Urban Informal sector</li> <li>• Urban Infrastructure</li> <li>• Urban Environmental Problems</li> </ul>                                                                                                                | 4      |
| <b>ChapterNo.3EconomicReformsandAgriculture</b> <ul style="list-style-type: none"> <li>• Agriculture and WTO</li> <li>• Price policy and Subsidies</li> <li>• Commercialisation and Diversification</li> <li>• Food security and PDS</li> <li>• Impact of public investment on agricultural growth</li> <li>• Agrarian Crisis, Farm Incomes, MGNREGS</li> </ul> | 6      |
| <b>Practicum</b> <ol style="list-style-type: none"> <li>1. Mini project to ascertain the impact of pandemic on lives of different sections of population</li> <li>2. Field visits to understand the agrarian situation</li> </ol>                                                                                                                               |        |

|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |    |
|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----|
| <b>Unit-2 NEW POLICY INITIATIVES</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               | 14 |
| <b>Chapter No.4. Industrial Policy</b> <ul style="list-style-type: none"> <li>• New Industrial Policy and changes</li> <li>• Public sector reform</li> <li>• Privatisation and Disinvestment</li> </ul>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            | 4  |
| <ul style="list-style-type: none"> <li>• Competition Policy</li> </ul>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |    |
| <b>Chapter No.5.Changing Economic Environment</b> <ul style="list-style-type: none"> <li>• Ease of Doing Business</li> <li>• Performance of MSMEs</li> <li>• Role of MNC's in Industrial Development</li> <li>• Make in India, development of economic and social infrastructure</li> <li>• National Monetization Pipeline</li> </ul> <p>(The teacher should include the latest policy of the government)</p> <b>Chapter No.6.Fiscal Policy</b> <ul style="list-style-type: none"> <li>• Tax, Expenditure ,Budgetary deficits</li> <li>• Pension and Fiscal Reforms</li> <li>• Public debt management and reforms</li> <li>• Fiscal Responsibility and Budget Management(FRBM)Act</li> <li>• GST ,Fiscal Federalism and Fiscal Consolidation</li> <li>• Recommendation of the Current Finance Commission</li> </ul> <b>Practicum:</b> Mini-projects to assess the business climate | 5  |
| <b>Unit-3MONETARYPOLICY,FOREIGNTRADEANDINVESTMENT</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              | 14 |

|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |   |
|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---|
| <b>Chapter No.7 Money Market</b> <ul style="list-style-type: none"> <li>• Organisation of India's money market</li> <li>• Financial sector reforms</li> <li>• Interest rate policy</li> <li>• Review of monetary policy of RBI</li> </ul>                                                                                                                                                                                                                                                                  | 3 |
| <b>Chapter No.8. Capital Markets</b> <ul style="list-style-type: none"> <li>• Working of SEBI in India</li> <li>• Changing roles of the Reserve Bank of India</li> <li>• Commercial banks,</li> <li>• Development Finance Institutions</li> <li>• Foreign banks and non-banking financial institutions</li> <li>• Analysis of price behaviour in India, Anti-inflationary measures</li> <li>• Demonetization and its impact</li> </ul>                                                                     | 5 |
| <b>Chapter No.9. Foreign Trade and Investment</b> <ul style="list-style-type: none"> <li>• India's foreign trade</li> <li>• India Balance of payment since 1991</li> <li>• New Exchange Rate Regime: Partial and full convertibility</li> <li>• Capital account convertibility</li> <li>• FDI– Trends and Patterns</li> <li>• New EXIM policy, WTO and India</li> <li>• Bilateral and Multilateral Trade Agreements and Associations</li> </ul>                                                            | 6 |
| <b>Practicum:</b> <ol style="list-style-type: none"> <li>1. Computation and analysis of Wholesale Price Index, Consumer Price Index: components and trends.</li> <li>2. Group Discussions on India's trade policies and trade agreements</li> </ol>                                                                                                                                                                                                                                                        |   |
| <b>References</b> <ul style="list-style-type: none"> <li>• Bardhan, P.K. (9th Edition) (1999), The Political Economy of Development in India, Oxford University Press, New Delhi.</li> <li>• Bhaduri Amit, (2015), A Model of Development By Dispossession, Fourth Foundation</li> <li>• Byres Terence J. (ed.), (1998), The State, Development Planning and Liberalisation in India, Delhi, OUP</li> <li>• Dutt Ruddar and K. P. M Sundaram (2001): Indian Economy, S Chand &amp; Co. Ltd. New</li> </ul> |   |



|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |  |
|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--|
| <p>Delhi.</p> <ul style="list-style-type: none"> <li>• Frankel Francine R., (2004), India's Political Economy, Delhi. OUP Jenkins Rob, 2000, Economic Reform in India, Cambridge, CUP</li> <li>• Jalan, B. (1996), India's Economic Policy- Preparing for the Twenty First Century, Viking, New Delhi.</li> <li>• Joshi Vijaya and L.M.D.Little,(1998),India's Economic Reform1991-2001,Delhi,OUP.</li> <li>• Kapila Uma: Indian Economy: Policies and Performances, Academic Foundation</li> <li>• Mishra S.K &amp; V.K Puri (2001) "Indian Economy and –Its development experience",Himalaya Publishing House.</li> <li>• Mukharji Rahul (ed.) (2007), India's Economic Transition: The Politics of Reforms, edited by Rahul Mukherji, Oxford University Press, New Delhi.</li> <li>• Stuart and John Harris,(2000),Re inventing India, Cambridge Polity</li> </ul> |  |
|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--|

### **Pedagogy**

| <b>Formative Assessment</b>          |                                |
|--------------------------------------|--------------------------------|
| <b>Assessment Occasion/<br/>type</b> | <b>Weight age in<br/>Marks</b> |
| Internal Test                        | 50%                            |
| Assignment                           | 25%                            |
| Presentation/Project                 | 25%                            |
| <b>Total</b>                         | <b>100</b>                     |

## Semester I

|                                                           |                               |
|-----------------------------------------------------------|-------------------------------|
| Course Title: <b>OEC1.5:Kautilya's Arthashastra (OEC)</b> |                               |
| Total Contact Hours:42                                    | Course Credits:3              |
| Formative Assessment Marks:40                             | Duration of ESA/Exam: 3 Hrs   |
| Model Syllabus Authors:                                   | Summative Assessment Marks:60 |

**Course Pre-requisite(s):** 12<sup>th</sup> Standard Pass

**Course Outcomes ( COs):**

At the end of the course the student should be able to:

1. This course will enlighten the students about the ancient fundamentals about political and economic constituents, which will frame out a basic land of understanding the modern trends. This will help them to understand the upcoming needs in the area of policy making for states at national and international level.
2. This treatise deals with the science of Governance, so it projects out all the dimensions needed to be understood by students about the present socio-economic and political rules and regulations of the state.

| Unit | Description                                                                                                                                                                                                                                                                                                                                                 | Hours |
|------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------|
| I    | Chapter1: Introduction to the Arthashastra,                                                                                                                                                                                                                                                                                                                 | 2     |
|      | Chapter2: Various disciplines of Indian Education System,                                                                                                                                                                                                                                                                                                   | 2     |
|      | Chapter3: Place of Kautilya Arthashastra among them,                                                                                                                                                                                                                                                                                                        | 2     |
| II   | Chapter4: Importance of science dealing with governance-Introduction to Tantra yuktis –The methods of preparing a compendium ,tools and techniques of Writing a compendium.                                                                                                                                                                                 | 5     |
|      | Chapter5: Governance Procedure-Appointment of the ministers, duties of Government superintendents, treasury, spies, royal writ, punishment-Vakparushya And Dandaparushya;                                                                                                                                                                                   | 5     |
|      | Chapter6: Laws of Inheritance –Determination of forms of Agreements, Determination of legal disputes, Division of inheritance, Special shares in inheritance, Distinction between sons                                                                                                                                                                      | 5     |
| III  | Chapter7: Economic Dimension-Body of income of the state, collection of revenue, duties of a Chamberlin (koshadhyksha), forty ways of embezzlement of the revenue, punishment for the embezzlement of revenue, expenditure, Loss and Profit, Keeping up the Accounts, Recovery of Debts, Deposits of the state, Resumption of The gifts, Remission of Taxes | 9     |
|      | Chapter8: Political Dimension-Six-fold Policy-War, Combination of Powers, Agreement of Peace with or without definite terms, Double Policy, Circle of States, Conduct of Corporations, Secret means, Plan of treatise,                                                                                                                                      | 9     |
|      | Chapter9: Defence and Warfare: Planning of different Vyuhas in War                                                                                                                                                                                                                                                                                          | 3     |

**Suggested readings:**

1. Arthashastra of Kautilya by T.Ganapati Shastri, Chaukhambha Sur bharti Prakashana, Varanasi, India,2005.
2. Arthashastrav of Kautilya by Sri. Vacaspati Gairola, Chaukhambha Vidya bahavan,Varanasi,India,2013.
3. Kautilya, The Arthashastra by L.N.Rangarajan, Penguin Books Ltd, London. Kautilya's Arthashastra:The Way of Financial Management and Economic Governance, Jaico Publishing House

**Pedagogy**

| <b>Formative Assessment</b>     |                            |
|---------------------------------|----------------------------|
| <b>Assessment Occasion/type</b> | <b>Weight age in Marks</b> |
| Internal Test                   | 50%                        |
| Assignment                      | 25%                        |
| Presentation/Project            | 25%                        |
| <b>Total</b>                    | <b>100</b>                 |

## Semester1

|                                                            |                               |
|------------------------------------------------------------|-------------------------------|
| <b>CourseTitle:OEC1.5:Pre-Reforms Indian Economy (OEC)</b> |                               |
| Total Contact Hours:42                                     | CourseCredits:3               |
| Formative Assessment Marks:40                              | Duration of ESA/Exam: 3 Hrs   |
| Model Syllabus Authors:                                    | Summative Assessment Marks:60 |

**Course Pre-requisite(s):** 12<sup>th</sup> Standard Pass

**Course Out comes(COs):**

At the end of the course the student should be able to:

- i. Trace the evolution of Indian Economy
- ii. Identify the structural features and constraints of the Indian economy
- iii. Evaluate planning models and strategy adopted in India
- iv. Analyze the sector specific problems and contributions towards overall economic growth
- v. Review various economic policies adopted

| Unit      | Description                                                                                                                                                                                                                                                                                                                                                                                                                                           | Hours     |
|-----------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------|
| <b>I</b>  | <b>Features and problems of Indian Economy</b>                                                                                                                                                                                                                                                                                                                                                                                                        | <b>15</b> |
|           | <b>Chapter 1: Features of Indian Economy</b> <ul style="list-style-type: none"> <li>India as a developing economy,</li> <li>Demographic features</li> <li>Human Development (HDI),</li> <li>Problems of Poverty, Unemployment, Inflation, income inequality</li> </ul>                                                                                                                                                                                | 4         |
|           | <b>Chapter2: Issues in Agriculture sector in India</b> <ul style="list-style-type: none"> <li>Land reforms</li> <li>Green Revolution</li> <li>Agriculture marketing in India</li> <li>Agricultural price policy</li> </ul>                                                                                                                                                                                                                            | 6         |
|           | <b>Chapter3: Industrial and Service Sector</b> <ul style="list-style-type: none"> <li>Industrial development;</li> <li>Micro, Small and Medium Enterprises,</li> <li>Industrial Policy</li> <li>Performance of public sector in India,</li> <li>Service sector in India.</li> </ul> <b>Practicum:</b> 1. Identifying economic problems and their causes;<br>2. Mini-project on any aspect of Indian agriculture, industry, service and public sectors | 5         |
| <b>II</b> | <b>Economic Policies</b>                                                                                                                                                                                                                                                                                                                                                                                                                              | <b>13</b> |
|           | <b>Chapter4: Planning</b> <ul style="list-style-type: none"> <li>Mixed Economy</li> <li>Bombay Plan</li> <li>Gandhian Model</li> <li>Nehru Mahalanobis Model</li> <li>Objectives and achievements of economic planning in India</li> </ul>                                                                                                                                                                                                            | 5         |
|           | <b>Chapter5: Monetary policy in India</b> <ul style="list-style-type: none"> <li>Instruments of Monetary Policy</li> </ul>                                                                                                                                                                                                                                                                                                                            | 2         |

|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |                     |
|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------|
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            | <ul style="list-style-type: none"> <li>• Black money in India–Magnitude and Impact</li> </ul> <b>Chapter6:Fiscal Policy in India</b> <ul style="list-style-type: none"> <li>• Tax Revenue</li> <li>• Public expenditure</li> <li>• Budgetary deficits</li> <li>• Fiscal reforms</li> <li>• Public debt management and reforms</li> <li>• Centre state Finance Relations and Finance commissions in India.</li> </ul> <b>Practicum:</b> Assignment on successes and failures of India’s planning; Monetary and Fiscal Policy instruments                                                                                                                                                                                                                                                                                                           | 6                   |
| <b>III</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 | <b>External sector and Nature of Reforms in India</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             | <b>14</b>           |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            | <b>Chapter 7: India’s foreign trade</b> <ul style="list-style-type: none"> <li>• Salient features</li> <li>• Value, composition and direction of trade</li> <li>• Balance of payments</li> <li>• Goal of self-reliance based on import substitution and protection</li> <li>• Tariff policy</li> <li>• Exchange rate</li> </ul> <b>Chapter8:Post-1991strategies</b> <ul style="list-style-type: none"> <li>• Stabilization and structural adjustment packages</li> <li>• Liberalization Privatization Globalization ( LPG)Model</li> <li>• Impact of LPG Policies on Indian Economy</li> </ul> <b>Chapter9: NITI Ayog</b> <ul style="list-style-type: none"> <li>• Organization</li> <li>• Functions</li> </ul> <b>Practicum:</b> Calculation of BoP and evaluating trade policies; Assignment and group discussion on the impact of LPG Policies | 6<br><br>6<br><br>2 |
| <b>Suggested Readings:</b> <ol style="list-style-type: none"> <li>1. Dutt Ruddar and K.P.MSundaram(2001):Indian Economy, S Chand &amp; Co. Ltd. New Delhi.</li> <li>2. Mishra S.K &amp; V.K Puri (2001) “Indian Economy and –Its development experience”, Himalaya Publishing House.</li> <li>3. Kapila Uma:Indian Economy: Policies and Performances, Academic Foundation</li> <li>4. Bardhan, P.K. (9th Edition) (1999), The Political Economy of Development in India, Oxford University Press, New Delhi.</li> <li>5. Jalan, B. (1996), India’s Economic Policy- Preparing for the Twenty First Century, Viking, New Delhi.</li> </ol> |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |                     |

### Pedagogy

| Formative Assessment     |                     |
|--------------------------|---------------------|
| Assessment Occasion/type | Weight age in Marks |
| Internal Test            | 50%                 |
| Assignment               | 25%                 |
| Presentation/Project     | 25%                 |
| <b>Total</b>             | <b>100</b>          |

## Semester1

|                                                      |                               |
|------------------------------------------------------|-------------------------------|
| Course Title: <b>OEC1.5:Development Studies(OEC)</b> |                               |
| Total Contact Hours:42                               | Course Credits:3              |
| Formative Assessment Marks:40                        | Duration of ESA/Exam: 3 Hrs   |
| Model Syllabus Authors:                              | Summative Assessment Marks:60 |

**Course Pre-requisite(s):** 12<sup>th</sup> Standard Pass Course Outcomes (COs):

At the end of the course the student should be able to:

- i. Graduates will be able to excel in higher studies and/or to succeed in profession.
- ii. Graduates will get a solid foundation of fundamentals required to solve socio economic problems and also to pursue higher studies.
- iii. Graduates will demonstrate knowledge to appreciate of the dimensions of contemporary development issues, to generate sensitivity to problems concerning ethics and human values to develop orientation towards effective communication and critical analysis, and to appreciate the interrelationships among disciplines as they relate to every day realities.
- iv. Graduates will cultivate professional and ethical attitude, effective Communication skills, teamwork skills, multidisciplinary approach, and to facilitate an advanced understanding and appreciation of the principles, methodologies, value systems, and thought processes employed in human inquiries.

| Unit | Description                                                                                                                                                                                                                                                   | Hrs       |
|------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------|
| I    | <b>Development :Meaning and Current Challenges</b>                                                                                                                                                                                                            | <b>9</b>  |
|      | <b>Chapter 1: Meaning of Development</b> <ul style="list-style-type: none"> <li>The concept of development,</li> <li>Growth and Development</li> <li>Transition from quantitative to qualitative indices</li> </ul>                                           | 3         |
|      | <b>Chapter 2: Modern economic growth</b> <ul style="list-style-type: none"> <li>Characteristics of modern economic growth</li> <li>Regional and global disparities</li> <li>Common characteristics and dissimilarities among developing countries.</li> </ul> | 3         |
|      | <b>Chapter3:CurrentDevelopmentChallenges</b> <ul style="list-style-type: none"> <li>Poverty</li> <li>Inequality</li> <li>Migration</li> <li>Conflict</li> </ul>                                                                                               | 3         |
| II   | <b>Approaches to Development</b>                                                                                                                                                                                                                              | <b>12</b> |
|      | <b>Chapter 4:Development and Ethics</b> <ul style="list-style-type: none"> <li>Concept and meaning</li> <li>Principles and importance of Development Ethics</li> </ul>                                                                                        | 2         |
|      | <b>Chapter 5:Measuring Development</b> <ul style="list-style-type: none"> <li>Per capita income and PPP</li> <li>PQLI</li> <li>Choice and Capabilities</li> <li>HDI</li> </ul>                                                                                | 4         |
|      | <b>Chapter6:Classical Approaches of Development</b> <ul style="list-style-type: none"> <li>Adam Smith</li> </ul>                                                                                                                                              | 6         |



## SEMESTER- I

|                                                                          |                                |
|--------------------------------------------------------------------------|--------------------------------|
| <b>Semester I</b> Course Title: <b>OEC 1.5: Business Economics (OEC)</b> |                                |
| Total Contact Hours: 42                                                  | Course Credits: 3              |
| Formative Assessment Marks: 40                                           | Duration of ESA/Exam: 3 Hrs    |
| Model Syllabus Authors:                                                  | Summative assessment marks :60 |

**Course Pre-requisite(s):** *12<sup>th</sup> Standard Pass*

### Course Outcomes (OCs)

**At the end of the course the student shall have:**

1. Acquired the concepts, tools and techniques of economics in analysing and interpreting the business decisions.
2. Developed the insight of the functioning of the economy

| Unit | Description                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       | Hours                                        |
|------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------|
| 1    | <b>Introduction to Business Economics</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         | 12 Hours                                     |
|      | <p><b>Chapter 1: Nature and scope of business economics</b></p> <ul style="list-style-type: none"> <li>• Nature of Business Economics</li> <li>• Meaning and definitions</li> <li>• Subject matter of business economics</li> <li>• Significance of business economics.</li> </ul> <p><b>Chapter 2: Economic laws and business environment</b></p> <ul style="list-style-type: none"> <li>• nature of economic laws</li> <li>• Factors determining business</li> <li>• Business objectives</li> </ul> <p><b>Chapter 3: Demand and supply analysis</b></p> <ul style="list-style-type: none"> <li>• Law of diminishing marginal utility</li> <li>• Law of demand</li> <li>• Determinants of demand</li> <li>• Price elasticity of demand</li> <li>• Law of supply</li> <li>• Elasticity of supply</li> </ul> <p><b>Practicum: 1.</b> Prepare a demand schedule based on selected product in the market.</p> <p>2. Group discussion on human and non- human factors of business</p> | <p>4 Hours</p> <p>4 Hours</p> <p>4 Hours</p> |





### **Suggested readings**

1. Sundharam K.P.M. & Sundharam E.N. – Business Economics, Sultanchand & Sons, New Delhi.
2. Ahuja H.L. – Business Economics, Sultanchand & Sons, New Delhi
3. Mehta P.L., Managerial Economics, Sultanchand & Sons, New Delhi.
4. Dwivedi D.N., Managerial Economics, Vikas Publishing House Pvt. Ltd., New Delhi.
5. Mithani D.M., Managerial Economics, Himalaya Publishing House, Mumbai.
6. Peterso H. Craig and W. Cris Lewis – Managerial Economics, Pearson Education, Singapore.
7. Salvatore Dominic – Managerial Economics, McGraw Hill, New York.
8. Fred David – Strategic Management

### **Pedagogy**

| <b>Formative Assessment</b>     |                            |
|---------------------------------|----------------------------|
| <b>Assessment Occasion/type</b> | <b>Weight age in Marks</b> |
| Internal Test                   | 50%                        |
| Assignment                      | 25%                        |
| Presentation/Project            | 25%                        |
| <b>Total</b>                    | <b>100</b>                 |

## Semester II

|                                                |                               |
|------------------------------------------------|-------------------------------|
| Course Title: <b>DSC2.2:Basic Economics II</b> |                               |
| Total Contact Hours: 42                        | Course Credits: 3             |
| Formative Assessment Marks:40                  | Duration of ESA/Exam: 3Hrs    |
| Model Syllabus Authors:                        | Summative Assessment Marks:60 |

**Course Pre-requisite(s):** *Basic Economics I*

**Course Outcomes (COs):**

At the end of the course the student should be able to:

1. Understand the operation of the overall economic system;
2. Calculate national income and related aggregates
3. Explain the relationship between macro economic aggregates;
4. Analyse the nature of business cycles and policies towards controlling them;
5. Evaluate the macroeconomic policies for solving major problems like poverty and unemployment

| Unit      | Description                                                                                                                                                                                                                                                                                                       | Hrs       |
|-----------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------|
| <b>I</b>  | <b>Macro economic variables and concepts</b>                                                                                                                                                                                                                                                                      | <b>12</b> |
|           | <b>Chapter1:Macro economic model</b> <ul style="list-style-type: none"> <li>• Introduction to National Income Accounting</li> <li>• Concepts of GDP, GNP and national income</li> <li>• Approaches to calculating GDP, personal income, Nominal and real GDP</li> <li>• Limitations of the GDP concept</li> </ul> | 5         |
|           | <b>Chapter2:Demand and supply of money</b> <ul style="list-style-type: none"> <li>• Meaning</li> <li>• The demand for money – determinants</li> <li>• The supply of money– sources</li> <li>• Credit creation</li> </ul>                                                                                          | 4         |
|           | <b>Chapter3:Inflation</b> <ul style="list-style-type: none"> <li>• Meaning and causes of inflation</li> <li>• Calculating inflation rate</li> <li>• Impact of inflation</li> </ul>                                                                                                                                | 3         |
|           | <b>Practicum:</b> 1. Understanding the relationships between various NI concepts used in India's NI accounting;<br>2. Estimating the components of money supply and interpreting the various price indices                                                                                                        |           |
| <b>II</b> | <b>Macro economic Challenges and Policies</b>                                                                                                                                                                                                                                                                     | <b>12</b> |
|           | <b>Chapter4:Macroeconomic challenges</b> <ul style="list-style-type: none"> <li>• Unemployment</li> <li>• Economic Growth</li> <li>• Business Cycles</li> </ul>                                                                                                                                                   | 3         |
|           | <b>Chapter5:Monetary Policy</b> <ul style="list-style-type: none"> <li>• Objectives</li> </ul>                                                                                                                                                                                                                    | 3         |

|  |                                                                                                                                                                                                                                                                                                                                 |   |
|--|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---|
|  | <ul style="list-style-type: none"> <li>• Instruments</li> </ul> <b>Chapter6:Fiscal Policy</b> <ul style="list-style-type: none"> <li>• Public finance vs. Private finance</li> <li>• Fiscal functions and role of government: allocation, distribution and stabilization</li> <li>• Characteristics of public goods,</li> </ul> | 6 |
|--|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---|

|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |    |
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|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  | <ul style="list-style-type: none"> <li>Rationale of public provision of public goods</li> </ul> Practicum: 1. Reviewing the monetary policy of RBI;<br>2. A project to identify the nature and causes of poverty and the latest central budget                                                                                                                                                                                                                                                                                                 |    |
| III                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              | <b>Public Policy and Globalization</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         | 18 |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  | <b>Chapter 7: Poverty and public policy</b> <ul style="list-style-type: none"> <li>Meaning, measurement and types of poverty</li> <li>Poverty alleviation strategies in India</li> </ul> <b>Chapter 8: Concepts and Theories of international trade</b> <ul style="list-style-type: none"> <li>The economic basis for trade—absolute advantage and comparative advantage,</li> <li>Terms of trade</li> <li>Exchange rates</li> <li>Trade Barriers—tariffs, subsidies and quotas</li> </ul> Balance of Payments—The current and capital account | 6  |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  | <b>Chapter 9: Globalization</b> <ul style="list-style-type: none"> <li>Meaning</li> <li>Importance</li> <li>Pros and cons of Globalization</li> </ul> Practicum: Survey on identification of poor; Calculating the components of BoP of India                                                                                                                                                                                                                                                                                                  | 9  |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                | 3  |
| <b>References(indicative)</b> <ol style="list-style-type: none"> <li>Cohen, A.J.(2020) .<i>Macro economics for Life: Smart Choices for All?</i>+ <i>My Lab Economics with Pearson e Text</i> (updated 2<sup>nd</sup> ed.). Toronto, ON: Pearson Canada Inc. Type: Textbook: ISBN:9780136716532</li> <li>Cohen, A.J. (2015). <i>Micro economics for Life: Smart Choices for You + My Lab Economics with Pearson e Text</i>(2<sup>nd</sup> ed.). Toronto, ON: Pearson Canada Inc. Type: Text book :ISBN: 9780133899368</li> <li>Case Karl E. and Fair Ray C. Principles of Economics, Pearson Education Asia,2014.</li> <li>Mankiw N.Gregory.Principles of Economics,Thomson,2013.</li> <li>Stiglitz J.E. and Walsh C.E. Principles of Economics, W.W. Norton &amp; Co, New York, 2011.</li> </ol> |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |    |

### Pedagogy

| Formative Assessment      |                     |
|---------------------------|---------------------|
| Assessment Occasion /type | Weight age in Marks |
| Internal Test             | 50%                 |
| Assignment                | 25%                 |
| Presentation/Project      | 25%                 |
| <b>Total</b>              | <b>100</b>          |

## Semester II

|                                                |                               |
|------------------------------------------------|-------------------------------|
| Course Title: <b>DSC 2.3:Karnataka Economy</b> |                               |
| Total Contact Hours:42                         | Course Credits:3              |
| Formative Assessment Marks:40                  | Duration of ESA/Exam: 3 Hrs   |
| Model Syllabus Authors:                        | Summative Assessment Marks:60 |

### Course Pre-requisite (s):

### Course Outcomes (COs):

At the end of the course the student should be able to:

1. Understand the nature of economic growth and problems of Karnataka state.
2. Explain the process of structural growth in Karnataka economy;
3. Evaluate the policies and programmes undertaken by the Govt. of Karnataka for bringing about socio-economic development

| Unit | Description                                                                                                                                                                                                                                                                                                                                       | Hours     |
|------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------|
| I    | <b>Characteristics of Karnataka Economy</b>                                                                                                                                                                                                                                                                                                       | <b>12</b> |
|      | <b>Chapter1: State Income</b> <ul style="list-style-type: none"> <li>• State Domestic Product and PCI</li> <li>• Measures to redress regional imbalances</li> </ul>                                                                                                                                                                               | 2         |
|      | <b>Chapter2:Human and Natural Resources</b> <ul style="list-style-type: none"> <li>• Population</li> <li>• Human Development Index</li> <li>• Poverty and Unemployment– Anti-Poverty and Employment generation Programmes</li> <li>• Functioning of Panchayat Raj Institutions</li> </ul>                                                         | 6         |
|      | <b>Chapter3:Natural Resources in Karnataka</b> <ul style="list-style-type: none"> <li>• Land, Water, Forest and mineral resources in Karnataka</li> <li>• Sustainable Development Goals</li> <li>• Karnataka environmental Policy</li> </ul> Practicum:                                                                                           | 4         |
| II   | <b>Agriculture and Industries in Karnataka</b>                                                                                                                                                                                                                                                                                                    | <b>18</b> |
|      | <b>Chapter4:Agriculture in Karnataka</b> <ul style="list-style-type: none"> <li>• Importance of Agriculture</li> <li>• Problems in Agriculture</li> <li>• Land Reforms</li> <li>• Cropping Pattern</li> <li>• Irrigation</li> <li>• Watershed Development</li> <li>• Dry Land Farming</li> <li>• Farmers Suicide –causes and solutions</li> </ul> | 9         |
|      | <b>Chapter5:Rural Development</b> <ul style="list-style-type: none"> <li>• Public Distribution System</li> <li>• Rural Development Programmes.</li> </ul>                                                                                                                                                                                         | 3         |
|      | <b>Chapter 6:Industries in Karnataka</b>                                                                                                                                                                                                                                                                                                          | 6         |

|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |             |
|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------|
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      | <ul style="list-style-type: none"> <li>• Major Industries in Karnataka-Problems and Prospects</li> <li>• MSMEs -Problems and Measures</li> <li>• IT Industries in Karnataka</li> <li>• Industrial Finance in Karnataka</li> <li>• Industrial Policy of Karnataka</li> </ul> Practicum:                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |             |
| III                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  | <b>Infrastructure and Finances</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   | 12          |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      | <b>Chapter7:InfrastructureinKarnataka</b> <ul style="list-style-type: none"> <li>• Transportation: Road, Rail, Water and Air Transport</li> <li>• InformationandCommunicationTechnologyfacilities;C</li> </ul> hapter8:SocialInfrastructure <ul style="list-style-type: none"> <li>• Drinking Water, Sanitation</li> <li>• Housing</li> <li>• Health and Education</li> <li>• Social Security in Karnataka</li> </ul> <b>Chapter9:StateFinance</b> <ul style="list-style-type: none"> <li>• Sources of Revenue: Direct and Indirect Taxes</li> <li>• GST–Impact and Collections</li> <li>• Sharing of Central Taxes and Grand-in-Aid</li> <li>• Expenditure Sources</li> <li>• States Indebtedness</li> <li>• State Finance Commission</li> <li>• State Budget</li> </ul> Practicum: | 3<br>4<br>5 |
| <b>References (indicative)</b> <ol style="list-style-type: none"> <li>1. Government of Karnataka, Economic Survey [Various Issues]</li> <li>2. Planning Department, Annual Publication, Government of Karnataka.</li> <li>3. Karnataka at Glance, Annual Publication Government of Karnataka.</li> <li>4. Madaiah M &amp; Ramapriya. Karnataka Economy Growth: Issues and Development, Himalaya Pub., House, New Delhi.</li> <li>5. Adul Aziz and K.G.Vasanti.(Eds) Karnataka Economy.</li> <li>6. Government District Development Reports</li> <li>7. Hanumantha Rao. Regional Disparities and Development in Karnataka.</li> <li>8. Krishnaiah Gowda H.R. Karnataka Economy, Spandana Publications, Bangalore</li> <li>9. Nanjundappa D.M.Some Aspects of Karnataka Economy.</li> <li>10. Puttaswamiah K. Karnataka Economy,Two Volumes</li> </ol> |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |             |

### Pedagogy

| Formative Assessment     |                     |
|--------------------------|---------------------|
| Assessment Occasion/type | Weight age in Marks |
| Internal Test            | 50%                 |
| Assignment               | 25%                 |
| Presentation/Project     | 25%                 |
| <b>Total</b>             | <b>100</b>          |

## Semester II

|                                                          |                               |
|----------------------------------------------------------|-------------------------------|
| <b>Course Title: OEC 2.5:Contemporary Indian Economy</b> |                               |
| Total Contact Hours:42                                   | Course Credits:3              |
| Formative Assessment Marks:40                            | Duration of ESA/Exam: 3 Hrs   |
| Model Syllabus Authors:                                  | Summative Assessment Marks:60 |

### **Course Pre-requisite(s):**

### **Course Outcomes (COs):**

At the end of the course the student should be able to:

- vi. Understand the current problems of Indian Economy
- vii. Identify the factors contributing to the recent growth of the Indian economy
- viii. Evaluate impact of LPG policies on economic growth in India
- ix. Analyze the sector specific policies adopted for achieving the aspirational goals
- x. Review various economic policies adopted

| <b>Content of Course 1</b>                                                                                                                                                                                                                                                                                                                               | <b>42 Hrs</b> |
|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------|
| <b>Unit-1 ECONOMIC REFORMS AND AGRICULTURE</b>                                                                                                                                                                                                                                                                                                           | 14            |
| <b>Chapter No.1 Recent Issues</b> <ul style="list-style-type: none"> <li>Genesis and Impact of new Economic policy</li> <li>India's population policy</li> <li>Demographic Dividend</li> <li>India's human development in global perspective</li> </ul>                                                                                                  | 4             |
| <b>Chapter No.2 Urbanization and governance</b> <ul style="list-style-type: none"> <li>Urbanization and Smart City Mission</li> <li>Urban Informal sector</li> <li>Urban Infrastructure</li> <li>Urban Environmental Problems</li> </ul>                                                                                                                 | 4             |
| <b>Chapter No.3 Economic Reforms and Agriculture</b> <ul style="list-style-type: none"> <li>Agriculture and WTO</li> <li>Price policy and Subsidies</li> <li>Commercialization and Diversification</li> <li>Food security and PDS</li> <li>Impact of public investment on agricultural growth</li> <li>Agrarian Crisis, Farm Incomes, MGNREGS</li> </ul> | 6             |
| <b>Practicum</b> <ol style="list-style-type: none"> <li>Mini-project to ascertain the impact of pandemic on lives of different sections of population</li> <li>Field visits to understand the agrarian situation</li> </ol>                                                                                                                              |               |
| <b>Unit-2 NEW POLICY INITIATIVES</b>                                                                                                                                                                                                                                                                                                                     | 14            |
| <b>Chapter No.4. Industrial Policy</b> <ul style="list-style-type: none"> <li>New Industrial Policy and changes</li> <li>Public sector reform</li> <li>Privatization and Disinvestment</li> </ul>                                                                                                                                                        | 4             |



|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |    |
|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----|
| <ul style="list-style-type: none"> <li>• Competition Policy</li> </ul>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |    |
| <b>ChapterNo.5.Changing Economic Environment</b> <ul style="list-style-type: none"> <li>• Ease of Doing Business</li> <li>• Performance of MSMEs</li> <li>• Role of MNC's in Industrial Development</li> <li>• Make in India, development of economic and social infrastructure</li> <li>• National Monetization Pipeline</li> </ul> <p>(The teacher should include the latest policy of the government)</p> <b>Chapter No.6.Fiscal Policy</b> <ul style="list-style-type: none"> <li>• Tax, Expenditure, Budgetary deficits</li> <li>• Pension and Fiscal Reforms</li> <li>• Public debt management and reforms</li> <li>• Fiscal Responsibility and Budget Management (FRBM)Act</li> <li>• GST, Fiscal Federalism and Fiscal Consolidation</li> <li>• Recommendations of the Current Finance Commission</li> </ul> <b>Practicum:</b> Mini-projects to assess the business climate | 5  |
| <b>Unit-3 MONETARY POLICY, FOREIGN TRADE AND INVESTMENT</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         | 5  |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     | 14 |

|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |   |
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| <b>Chapter No.7 Money Market</b> <ul style="list-style-type: none"> <li>• Organization of India's money market</li> <li>• Financial sector reforms</li> <li>• Interest rate policy</li> <li>• Review of monetary policy of RBI</li> </ul>                                                                                                                                                                                                                                                                 | 3 |
| <b>Chapter No.8. Capital Markets</b> <ul style="list-style-type: none"> <li>• Working of SEBI in India</li> <li>• Changing roles of the Reserve Bank of India</li> <li>• Commercial banks,</li> <li>• Development Finance Institutions</li> <li>• Foreign banks and non-banking financial institutions</li> <li>• Analysis of price behaviour in India, Anti-inflationary measures</li> <li>• Demonetization and its impact</li> </ul>                                                                    | 5 |
| <b>Chapter No.9. Foreign Trade and Investment</b> <ul style="list-style-type: none"> <li>• India's foreign trade</li> <li>• India Balance of payment since 1991</li> <li>• New Exchange Rate Regime: Partial and full convertibility</li> <li>• Capital account convertibility</li> <li>• FDI– Trends and Patterns</li> <li>• New EXIM policy, WTO and India</li> <li>• Bilateral and Multilateral Trade Agreements and Associations</li> </ul>                                                           | 6 |
| <b>Practicum:</b> <ol style="list-style-type: none"> <li>3. Computation and analysis of Wholesale Price Index, Consumer Price Index: components and trends.</li> <li>4. Group Discussions on India's trade policies and trade agreements</li> </ol>                                                                                                                                                                                                                                                       |   |
| <b>References</b> <ul style="list-style-type: none"> <li>• Bardhan, P.K. (9th Edition) (1999), The Political Economy of Development in India, Oxford University Press, New Delhi.</li> <li>• Bhaduri Amit, (2015), A Model of Development By Dispossession, Fourth Foundation</li> <li>• Byres Terence J. (ed.), (1998), The State, Development Planning and Liberalisation 'in India, Delhi, OUP</li> <li>• Dutt Ruddar and K.P.M Sundaram (2001): Indian Economy, S Chand &amp; Co. Ltd. New</li> </ul> |   |

|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |  |
|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--|
| <p>Delhi.</p> <ul style="list-style-type: none"> <li>• Frankel Francine R., (2004), India's Political Economy, Delhi. OUP Jenkins Rob, 2000, Economic Reform in India, Cambridge, CUP</li> <li>• Jalan, B. (1996), India's Economic Policy- Preparing for the Twenty First Century, Viking, New Delhi.</li> <li>• Joshi Vijaya and L.M.D. Little, (1998), India's Economic Reform 1991-2001, Delhi, OUP.</li> <li>• Kapila Uma: Indian Economy: Policies and Performances, Academic Foundation</li> <li>• Mishra S.K &amp; V.K Puri (2001) "Indian Economy and –Its development experience", Himalaya Publishing House.</li> <li>• Mukharji Rahul (ed.) (2007), India's Economic Transition: The Politics of Reforms, edited by Rahul Mukherji, Oxford University Press, New Delhi.</li> <li>• Stuart and John Harris, (2000), Reinventing India, Cambridge Polity</li> </ul> |  |
|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--|

### Pedagogy

| <b>Formative Assessment</b>     |                            |
|---------------------------------|----------------------------|
| <b>Assessment Occasion/type</b> | <b>Weight age in Marks</b> |
| Internal Test                   | 50%                        |
| Assignment                      | 25%                        |
| Presentation/Project            | 25%                        |
| <b>Total</b>                    | <b>100</b>                 |

## Semester II

|                                                      |                                |
|------------------------------------------------------|--------------------------------|
| <b>Course Title: OEC2.5: Sustainable Development</b> |                                |
| Total Contact Hours: 42                              | Course Credits: 3              |
| Formative Assessment Marks: 40                       | Duration of ESA/Exam: 3 Hrs    |
| Model Syllabus Authors:                              | Summative Assessment Marks: 60 |

### Course Pre-requisite (s):

### Course Outcomes (COs):

At the end of the course the student should be able to:

- Understand the basic concept of Sustainable Development (SD), the environmental, social and economic dimensions.
- Know the history of the SD idea.
- Be able to discuss the conflicts which are involved in the SD concept on the national as well as on the global scale.
- Be able to discuss the (dis-) advantages of instruments for SD;
- Evaluate the sustainable development goals and their attainments

| Unit      | Description                                                                                                                                                                                                                                                                                                                                                                                                                                | Hrs       |
|-----------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------|
| <b>I</b>  | <b>Environment, Development and Pollution</b>                                                                                                                                                                                                                                                                                                                                                                                              | <b>15</b> |
|           | <b>Chapter 1: Meaning Characteristics of Environmental Goods and Services</b> <ul style="list-style-type: none"> <li>Relationship between Environment and Development</li> <li>Environmental Kuznets Curve–Meaning and Evidence</li> <li>Sustainable Development–Meaning and Indicators</li> </ul>                                                                                                                                         | 3         |
|           | <b>Chapter 2: Resource Use and Management</b> <ul style="list-style-type: none"> <li>Resource Taxonomy – Renewable and non renewable resources</li> <li>Economic Theory of Depletable Resources</li> <li>Optimal Use of Renewable Resources</li> <li>Resource Scarcity and Economic Growth–Limits to Growth Model</li> <li>Tragedy of Commons and common property Resources</li> <li>Resource Pricing and Resource Conservation</li> </ul> | 6         |
|           | <b>Chapter 3: Sustainable Development</b> <ul style="list-style-type: none"> <li>Definitions, Objectives and Principles</li> <li>Processes and Indicators of Sustainable Development</li> <li>Approaches and Strategies for Sustainable Development</li> <li>Environmental accounting Measures</li> </ul>                                                                                                                                  | 6         |
|           | <b>Practicum:</b> Minor project on impact of development on local environment                                                                                                                                                                                                                                                                                                                                                              |           |
| <b>II</b> | <b>Sustainable Development Goals</b>                                                                                                                                                                                                                                                                                                                                                                                                       | <b>10</b> |
|           | <b>Chapter 4: Introduction and History</b> <ul style="list-style-type: none"> <li>Brundtland Committee Recommendations</li> <li>Rio Summit and Agenda 21</li> <li>SDGs: Goals, Targets and Indicators</li> </ul>                                                                                                                                                                                                                           | 3         |
|           | <b>Chapter 5: Government and the SDGs</b> <ul style="list-style-type: none"> <li>Planning</li> <li>Localizing the SDGs</li> <li>SDG Policy Instruments</li> <li>Industrial Policies and the SDGs</li> </ul>                                                                                                                                                                                                                                | 4         |
|           | <b>Chapter 6: Financing the SDGs</b>                                                                                                                                                                                                                                                                                                                                                                                                       | 3         |

|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |                            |
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|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      | <ul style="list-style-type: none"> <li>Types of financing</li> <li>New financing mechanisms and global funds</li> </ul> <p><b>Practicum:</b> Assignments on Progress in attainment of various SDGs in India and her states</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |                            |
| <b>III</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           | <b>Issues in Implementing SDGs</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              | 17                         |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      | <p><b>Chapter7:Meansto Realizing the SDGs</b></p> <ul style="list-style-type: none"> <li>De growth and circular economy</li> <li>Sustainable production and consumption</li> <li>Sustainable cities and transportation</li> <li>Sustainable designs, technology, digital revolution and innovation</li> <li>Renewable energy</li> </ul> <p><b>Chapter8: Implementing SDGs</b></p> <ul style="list-style-type: none"> <li>Governance and policy tools</li> <li>Openness ,participation and accountability,</li> <li>Effectiveness and coherence;</li> <li>India's framework for sustainable development</li> </ul> <p><b>Chapter9:OtherIssues</b></p> <ul style="list-style-type: none"> <li>Social business, CSOs, and operations</li> <li>Development Assistance</li> <li>Cross-Border Cooperation</li> </ul> <p><b>Practicum:</b> Group Discussion on case studies on sustainable practices and Processes</p> | <p>8</p> <p>5</p> <p>4</p> |
| <p><b>Suggested Readings:</b></p> <ul style="list-style-type: none"> <li>Baumol,W.J.andW.E.Oates(1988):<i>TheTheory of Environmental Policy</i> ( 2e),CUP, Cambridge.</li> <li>Bhattacharya,R.N.(Ed): <i>Environmental Economics: An Indian Perspective</i>, OUP, NewDelhi.</li> <li>Dalby, Simon, et al. <i>Achieving the Sustainable Development Goals: Global Governance Challenges</i>. Routledge, 2019.</li> <li>Day, G.S., and P.J.H. Schoemaker (2011), <i>Innovating in uncertain markets: 10 lessons for green technologies</i>, MIT Sloan ManagementReview,52.4:37-45.</li> <li>Elliott, Jennifer. <i>An introduction to sustainable development</i>.Routledge,2012.</li> <li>Gagnon, B., Leduc, R., and Savard, L., <i>Sustainable development in engineering: a review of principles and definition of a conceptual framework</i>.WorkingPaper08-18,2008.</li> <li>Hanley, Shogren and White(1997):<i>Environmental Economics in Theory and Practice</i>, Macmillan.</li> <li>Kolstad, C.D.(1999): <i>Environmental Economics</i>, OUP,ND.</li> <li>Pearce,D.W.andR. Turner(1991): <i>Economics of Natural Resource Use and Environment</i>, John Hopkins Press, Baltimore.</li> <li>Sachs, Jeffrey D .<i>The age of sustainable development</i>. Columbia University Press,2015</li> <li>Tietenberg,T.(1994): <i>Environmental Economics and Policy</i>, Harper Collins, NY.</li> </ul> |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |                            |

## Pedagogy

| Formative Assessment     |                     |
|--------------------------|---------------------|
| Assessment Occasion/type | Weight age in Marks |
| Internal Test            | 50%                 |
| Assignment               | 25%                 |
| Presentation/Project     | 25%                 |
| Total                    | 100                 |

## Semester II

|                                                      |                             |
|------------------------------------------------------|-----------------------------|
| CourseTitle:OEC2.5:Economics of Business Environment |                             |
| TotalContactHours:42                                 | CourseCredits:3             |
| FormativeAssessmentMarks:40                          | Duration of ESA/Exam: 3 Hrs |
| Model Syllabus Authors:                              | SummativeAssessmentMarks:60 |

**Course Pre-requisite(s):**

**Course Outcomes (COs):**

At the end of the course the student should be able to:

- i. Explain the elements of Business environment.
- ii. Identify the environmental constraints in the growth of a business firm.
- iii. Analyze the ways to utilize the current environmental conditions to achieve higher business growth.

| <b>Unit</b> | <b>Content of Course</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           | <b>42Hrs</b>        |
|-------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------|
| <b>I</b>    | <b>Introduction to Business Environment</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        | 12                  |
|             | <b>Chapter1:Introduction</b> <ul style="list-style-type: none"> <li>• Meaning and definition, objectives, importance and uses of study of business environment. Environmental analysis</li> <li>• Meaning,processofenvironmentalanalysis,limitationsofenvironmentalanal ysis,environmentalfactors</li> <li>• The Micro environment of business and the macro environment of business.</li> </ul> <b>Chapter2:EconomicEnvironment</b> <ul style="list-style-type: none"> <li>• Meaning of Economic Environment</li> <li>• Characteristics of Indian economy</li> <li>• Impact of Liberalization Privatization &amp; Globalization of Indian Business.</li> <li>• Monetary policy–Meaning, objectives</li> <li>• Fiscal policy–Meaning, objectives, budget and importance</li> <li>• EXIM policy –meaning and objectives</li> <li>• Industrial policy–meaning, objectives (Latest Policy Measures).</li> </ul> <b>Chapter3:Global Business Environment</b> <ul style="list-style-type: none"> <li>• Meaning</li> <li>• Globalization: Nature and Impact of globalization</li> <li>• Challenges of international business</li> <li>• GATT and WTO and its implications on Indian economy.</li> </ul> <b>Practicum</b> <ol style="list-style-type: none"> <li>1. Identification of the impact of business environment through surveys</li> <li>2. Group discussion on WTO and its impact on Indian business</li> </ol> | 3<br><br>6<br><br>3 |
| <b>II</b>   | <b>Non-Economic Environment</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    | 10                  |
|             | <b>Chapter4:Social and Cultural Environment</b> <ul style="list-style-type: none"> <li>• Business and Society</li> <li>• Social Objectives of Business</li> <li>• Corporate Social Responsibility</li> <li>• Consumer Rights&amp; Corporate Governance</li> <li>• Business Ethics</li> </ul> <b>Chapter5:TechnologicalEnvironment:</b> <ul style="list-style-type: none"> <li>• Meaning</li> </ul>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 | 4<br><br>2          |



## SEMESTER- II

| <b>Semester II</b> Course Title: <b>OEC 2.5: Monetary Economics</b> |                                |
|---------------------------------------------------------------------|--------------------------------|
| Total Contact Hours: 42                                             | Course Credits: 3              |
| Formative Assessment Marks: 40                                      | Duration of ESA/Exam: 3 Hrs    |
| Model Syllabus Authors:                                             | Summative assessment marks :60 |

**Course Pre-requisite(s):** *12<sup>th</sup> Standard Pass*

### Course Outcomes (OCs)

**At the end of the course the student should be able to:**

1. Understand the current monetary policy and problems
2. Identify and analyse monetary instruments
3. Review the various trends and functions of monetary and financial institutions

| <b>Unit</b> | <b>Description</b>                                                                                                                                                                                                                                                           | <b>Hours</b> |
|-------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------|
| <b>1</b>    | <b>Introduction to Monetary Economics</b>                                                                                                                                                                                                                                    | 12 Hours     |
|             | <b>Chapter 1: Nature and functions of money</b> <ul style="list-style-type: none"> <li>• Difficulties of barter exchange system</li> <li>• Evolution of money</li> <li>• Definitions of money</li> <li>• Functions of money</li> <li>• Demand and supply of money</li> </ul> | 4 Hours      |
|             | <b>Chapter 2: Theories of Value of Money</b> <ul style="list-style-type: none"> <li>• Meaning</li> <li>• Cash transaction approach</li> <li>• Cash Balance Approach</li> <li>• Milton Friedman's Restatement of Quantity theory</li> </ul>                                   | 4 Hours      |
|             | <b>Chapter 3: Inflation</b> <ul style="list-style-type: none"> <li>• Meaning and types of inflation</li> <li>• Causes and effects of inflation</li> <li>• Measures to control inflation</li> </ul>                                                                           | 4 Hours      |
|             | <b>Practicum:</b> 1. Discussion on the various forms of money<br>2. Gather information on near money assets                                                                                                                                                                  |              |





**Suggested readings**

1. An Outline of Money – Geoffrey Crowther (Read Books Publications, Canada, 15 March 2017)
2. R. S. Sayers; ‘Modern Banking’ - Oxford University Press- Seventh Edition- 30th Nov 1967
3. M L Jhingan ; ‘Money, Banking’, Inter National Trade and Public Finance – (Vrinda Publications, Delhi– 1 Jan 2013)
4. Dr. D. M. Mithani ; ‘Money, Banking, Inter National Trade and Public Finance’- (Himalayan Publishing House, New Delhi- 1 Jan 2014)
5. Nader E.N; ‘ Money and Banking’ – (Prentice Hall India Learning Pvt. Ltd – 1 Jan 2013)
6. Dr. M.L. Seth; ‘Money, Banking’, Inter National Trade and Public Finance- (Laxmi Narian Agarwal Educational Publishers, Agra, India– 1 Jan 2017)
7. R.R. Paul; ‘Money, Banking and Inter National Trade’ –. Kalyani Publishers – 1 Jan 2015)
8. Indian Institute of Banking – International Banking Operations

**Pedagogy**

| <b>Formative Assessment</b>     |                            |
|---------------------------------|----------------------------|
| <b>Assessment Occasion/type</b> | <b>Weight age in Marks</b> |
| Internal Test                   | 50%                        |
| Assignment                      | 25%                        |
| Presentation/Project            | 25%                        |
| <b>Total</b>                    | <b>100</b>                 |

Sd/-  
Sri. Dinakara Rao  
Member

Sd/-  
Dr. Vasantha Kumar  
Member

Sd/-  
Dr. Vedamani Basil Hans  
Member

Sd/-  
Mr. Channa Poojary  
Member(Special Invitee)

Sd/-  
Dr. Radhakrishna  
Member(Special Invitee)

Sd/-  
Dr. Roopa K.  
Member(Special Invitee)

Sd/-  
Prof. Vishwanatha  
Chairman



**Syllabus of**  
**U.G. Economics**  
**3<sup>rd</sup> & 4<sup>th</sup> Semester**

**Prepared and approved by U.G. BOS in Economics,  
Mangalore University on 08-09-2022**

|                            |                        |                            |          |                       |
|----------------------------|------------------------|----------------------------|----------|-----------------------|
| Program Name               | <b>BA in Economics</b> |                            | Semester | <b>Third Semester</b> |
| Course Title               | <b>Microeconomics</b>  |                            |          |                       |
| Course Code:               | <b>DSC-3.1</b>         | No. of Credits             |          | <b>3</b>              |
| Contact hours              | <b>42 Hours</b>        | Duration of SEA/Exam       |          | <b>2 hours</b>        |
| Formative Assessment Marks | <b>40</b>              | Summative Assessment Marks |          | <b>60</b>             |

**Course Outcomes (COs):** After the successful completion of the course, the student will be able to: CO1. Understand introductory economic concepts.

CO2. Recognize basic supply and demand analysis.

CO3. Recognize the structure and the role of costs in the economy.

CO4. Describe, using graphs, the various market models: perfect competition, monopoly, monopolistic competition, and oligopoly.

CO5. Explain how equilibrium is achieved in the various market models.

CO6. Identify problem areas in the economy, and possible solutions, using the analytical tools developed in the course.

|                                                                                                                                                                                                                                                           |  |  |               |
|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--|--|---------------|
| <b>Contents</b>                                                                                                                                                                                                                                           |  |  | <b>42 Hrs</b> |
| <b>Unit-1: Basics of Microeconomics</b>                                                                                                                                                                                                                   |  |  |               |
| <b>Chapter:1 Exploring Microeconomics:</b> Nature and scope of economics – opportunity cost, scarcity, production possibility frontier - Market system as a way to organise economic activities, welfare state                                            |  |  | <b>3</b>      |
| <b>Chapter:2 Supply and Demand:</b> Determinants of demand and supply; demand and supply schedules and; individual and market demand and supply; shifts in the demand and supply curves; Interaction of demand and supply; Equilibrium price and quantity |  |  | <b>3</b>      |

|                                                                                                                                                                                                                                                                                                  |   |
|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---|
| <b>Practicum:</b> <ul style="list-style-type: none"> <li>➤ Reading and working with graphs</li> <li>➤ Estimation of elasticity and discussing its applications; solving problems to estimate the equilibrium price and quantity</li> </ul>                                                       |   |
| <b>Unit -2: Consumption Decisions</b>                                                                                                                                                                                                                                                            |   |
| <b>Chapter 3</b><br><br><b>The Households:</b> Diminishing Marginal Utility; Indifference curves – Meaning and Properties; budget constraint; Satisfaction Maximization; income and substitution effects; choice between leisure and consumption.                                                | 5 |
| <b>Practicum:</b> Conducting a consumer survey to understand their tastes and preferences                                                                                                                                                                                                        |   |
| <b>Unit -3: Production and Costs</b>                                                                                                                                                                                                                                                             |   |
| <b>Chapter 4: The Firms:</b> Concept of firm and Industry; Production Function; Law of Variable Proportions; isoquant and isocost lines, cost minimizing equilibrium condition; Returns to Scale; Features of Cobb-Douglas Production Function                                                   | 5 |
| <b>Chapter 5: Cost of Production:</b> Short run and long run costs; Returns to Scale.                                                                                                                                                                                                            | 3 |
| <b>Practicum:</b> <ul style="list-style-type: none"> <li>➤ Analysing reasons for diminishing marginal returns</li> <li>➤ Examining the relationship between cost and output/ Deriving cost functions from output functions</li> </ul>                                                            |   |
| <b>Unit -4: Pricing</b>                                                                                                                                                                                                                                                                          |   |
| <b>Chapter 6: The Markets:</b> Meaning of Market Structure and Types; Pricing under perfect competition; Monopoly pricing and price discrimination; Monopolistic Competition – Features and Pricing; Oligopoly – Interdependence, Collusive and non-collusive oligopoly; Elements of Game theory | 7 |
| <b>Chapter 7: The Inputs (Factors):</b> Functional and Personal Income; Demand for and supply of factors; Marginal Productivity Theory of Distribution; Meaning and determinants of Rent, Wages, Interest and Profits                                                                            | 6 |
| <b>Practicum:</b> <ul style="list-style-type: none"> <li>➤ Conducting Market Survey to identify the nature and features of markets for different goods/services</li> <li>➤ Understanding distribution of national income as factor incomes</li> </ul>                                            |   |

|                                                                                                                                                                                         |   |
|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---|
| <b>Unit -5: Welfare Economics</b>                                                                                                                                                       |   |
| <b>Chapter 8: Welfare Economics:</b> Meaning of Welfare; Pigou's Welfare Economics; Compensation principle; Impediments to attain Maximum Social Welfare; Externalities, Market Failure | 6 |
| <b>Practicum:</b> Examining day to day externalities and proposing solutions to them                                                                                                    |   |
| <b>Unit -6: Economics in Action</b>                                                                                                                                                     |   |
| <b>Chapter 9: Economic Theory and Policy:</b> Pricing Practices; Basics of Monetary and Fiscal Policies; Controls and Regulations; Incentives and Penalties; Labour policies            | 4 |
| <b>Practicum:</b> Analysis of latest budget of the Central Government; Review of terminology used in the latest Monetary Policy of the RBI                                              |   |

**Pedagogy:** Classroom lecture, tutorials, Problem solving exercise

| Formative Assessment for C1 & C2                                               |          |    |
|--------------------------------------------------------------------------------|----------|----|
| Assessment Occasion/ type                                                      | Marks    |    |
|                                                                                | C1       | C2 |
| Internal Test                                                                  | 10       | 10 |
| Assignment/Seminar                                                             | 05       |    |
| Quiz                                                                           | 05       |    |
| Case study / Field work / Project work/ Industrial Visit and<br>Prepara report | -        | 10 |
| Total                                                                          | 40 Marks |    |
| Formative Assessment as per NEP guidelines are compulsory                      |          |    |

**Note: Strictly follow the Practicum**

| <b>References</b> |                                                                                          |
|-------------------|------------------------------------------------------------------------------------------|
| 1                 | Ahuja, H.L. (2008): <i>Principles of Microeconomics</i> , S. Chand and Co., New Delhi    |
| 2                 | Mankiw, N. Gregory (2020). <i>Principles of Economics</i> (Ninth ed.). Boston, MA.       |
| 3                 | Jhingan, M.L. (2016): <i>Microeconomics</i> , Vrinda Publications, New Delhi             |
| 4                 | Koutsoyianis, A (1979): <i>Modern Microeconomics</i> , London, Macmillan                 |
| 5                 | Omkarnath, G. (2012): <i>Economics: A Primer for India</i> , Orient Blackswan, Hyderabad |
| 6                 | Samuelson, Paul (2004): <i>Economics</i> , McGraw-Hill, New Delhi                        |

|   |                                                                                                                                                   |
|---|---------------------------------------------------------------------------------------------------------------------------------------------------|
| 7 | Krishnaiahgouda H.R. (2020): ಸಂಸ್ಥಾಮ ಅರಣ್ಯಶಾಸ್ತ್ರ ಸಪ್ನಾ ಬುಕ್ ಹೌಸ್, ಬೆಂಗಳೂರು                                                                       |
| 8 | <a href="https://www.core-econ.org/the-economy/book/text/0-3-contents.html">https://www.core-econ.org/the-economy/book/text/0-3-contents.html</a> |
| 9 | Somashekhar Ne. Thi., ಸಂಸ್ಥಾಮ ಅರಣ್ಯಶಾಸ್ತ್ರ ಸಿದ್ಧಲಿಂಗೇಶ್ವರಾ ಪ್ರಕಾಶನಾ, ಕಾಲ್ಬುರ್ಗಿ.                                                                  |



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|----------------------------|----------------------------------|----------------------------|----------------|-----------------------|
| Program Name               | <b>BA in Economics</b>           |                            | Semester       | <b>Third Semester</b> |
| Course Title               | <b>Mathematics for Economics</b> |                            |                |                       |
| Course Code:               | <b>DSC-3.2</b>                   | No. of Credits             | <b>3</b>       |                       |
| Contact hours              | <b>42 Hours</b>                  | Duration of SEA/Exam       | <b>2 Hours</b> |                       |
| Formative Assessment Marks | <b>40</b>                        | Summative Assessment Marks | <b>60</b>      |                       |

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| <b>Course Outcomes (COs):</b> After the successful completion of the course, the student will be able to:<br>CO1. Perform basic operations in Sets and functions and Matrix algebra.<br>CO2. Calculate limits, derivatives of Economic functions and identify the nature of relationship.<br>CO3. Calculate maxima and minima of function |               |
| <b>Contents</b>                                                                                                                                                                                                                                                                                                                           | <b>42 Hrs</b> |
| <b>Unit-1: Preliminaries</b>                                                                                                                                                                                                                                                                                                              | <b>12 Hrs</b> |
| <b>Chapter:1 - Introduction to Mathematical Economics:</b> Nature and scope of mathematicaleconomics- Role of mathematics in economic theory                                                                                                                                                                                              | 4             |
| <b>Chapter:2 - Number system and Set theory:</b> Types of Numbers: Natural Number, Real number,integers, Irrational Number, Complex Number. Concepts of sets- meaning – types- union of sets – interaction of sets.                                                                                                                       | 4             |
| <b>Chapter:3 - Functions:</b> Meaning of function- Types of functions: Linear and Non-linear Functions; Quadratic, Polynomial, Logarithmic and Exponential functions-                                                                                                                                                                     | 4             |
| <b>Unit -2: Economic Functions, their Application and Matrices</b>                                                                                                                                                                                                                                                                        | <b>14 Hrs</b> |
| <b>Chapter 4 Economic Functions:</b> Demand Function, Supply function, Production function, Cost, Revenue and Profit function, Consumption function                                                                                                                                                                                       | 4             |
| <b>Chapter-5: Applications of Functions:</b> Graph of Economic Functions, Market equilibrium;Equilibrium price and Quantity, Impact of specific tax and subsidy on market equilibrium                                                                                                                                                     | 5             |

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| <b>Chapter-6: Matrices:</b> Definition and Types of Matrices- Matrix Operations: Addition, Subtraction and Multiplication, Transpose of a Matrix, Determinants of Matrix- Cramer's Rule | 5             |
| <b>Unit -3: Differential Calculus and Its Applications</b>                                                                                                                              | <b>16 Hrs</b> |
| <b>Chapter 7- Limits:</b> Limits of functions, differentiation, rules of differentiation.                                                                                               | 4             |
| <b>Chapter 8 Derivatives of Economic functions:</b> Derivation of Marginal functions from totalfunction-Marginal Production, Marginal cost, Marginal Revenue, Marginal Profit.          | 6             |
| <b>Chapter 9 - Applications of Derivatives and Higher order derivatives:</b> Elasticity of Demand-Second order derivatives- Maxima and Minima of Economic function.                     | 6             |

**Pedagogy:** Classroom lecture, tutorials, Problem solving exercise

| Formative Assessment for C1 & C2                                             |          |    |
|------------------------------------------------------------------------------|----------|----|
| Assessment Occasion/ type                                                    | Marks    |    |
|                                                                              | C1       | C2 |
| Internal Test                                                                | 10       | 10 |
| Assignment/Seminar                                                           | 05       |    |
| Quiz                                                                         | 05       |    |
| Case study / Field work / Project work/ Industrial Visit and Preparea report | -        | 10 |
| Total                                                                        | 40 Marks |    |
| Formative Assessment as per NEP guidelines are compulsory                    |          |    |

| <b>References</b> |                                                                                                                          |
|-------------------|--------------------------------------------------------------------------------------------------------------------------|
| 1                 | Chiang, A. C. and Wainwright, K., "Fundamental Methods of Mathematical Economics", McGraw-Hill/Irwin, 4th Edition, 2005. |
| 2                 | Sydsaeter, K and Hammond, P., Mathematics for Economic Analysis, Pearson Educational Asia, 4thEdition, 2002.             |
| 3                 | Allen R.G.D., (2015) Mathematical Analysis for Economists, Macmillan.                                                    |
| 4                 | Bose D., (2003) An Introduction of Mathematical Economics, Himalaya Publishing House, Mumbai.                            |

|                   |                                                                                                                       |
|-------------------|-----------------------------------------------------------------------------------------------------------------------|
| 5                 | Dowling, E. T., "Introduction to Mathematical Economics", McGraw-Hill, 2001.                                          |
| 6                 | Hoy, M., Livernois, J. McKenna, C, Rees, R. and Stengos, T., "Mathematics for Economics", MITPress, 3rd Edition, 2011 |
| 7                 | Sydsaeter, K and Hammond, P., Mathematics for Economic Analysis, Pearson Educational Asia, 4thEdition, 2002.          |
| <b>References</b> |                                                                                                                       |
| 8                 | Veerachamy R (2005) Quantitative Methods for Economics, New Age International PublishersPrivate Ltd. New Delhi.       |
| 9                 | Yamane Taro, (2002) Mathematics for Economists -An Implementer Analysis, Phi Learning Publishers.                     |
| 10                | S. N. Yogish, Mathematical methods for Economists- Mangaldeep publications, Jaipur.                                   |

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|----------------------------|------------------------|----------------------------|-----------------------|
| Program Name               | <b>BA in Economics</b> | Semester                   | <b>Third Semester</b> |
| Course Title               | <b>Rural Economics</b> |                            |                       |
| Course Code:               | <b>OE-3.1</b>          | No. of Credits             | <b>3</b>              |
| Contact hours              | <b>42 Hours</b>        | Duration of SEA/Exam       | <b>2 Hours</b>        |
| Formative Assessment Marks | <b>40</b>              | Summative Assessment Marks | <b>60</b>             |

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| <b>Course Outcomes (COs):</b> After the successful completion of the course, the student will be able to:<br>CO1. To Understand the basics of rural development,<br>CO2. To study the characteristics, problems, and programmes of rural redevelopment<br>CO3. To study the trends and patterns of economic activities in rural areas<br>CO4. To study the role of infrastructural facilities and governance in rural development<br>CO5. To enable the students to know about significance of rural enterprises and agricultural allied activities. |               |
| <b>Contents</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      | <b>42 Hrs</b> |
| <b>Unit-1:</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       | <b>12 Hrs</b> |
| <b>Chapter:1 - Introduction to Rural Economy</b><br>Meaning and Objectives of Rural economy<br>Characteristics of Rural Economy<br>Indicators of Rural Development<br>Concepts of inclusive and sustainable development                                                                                                                                                                                                                                                                                                                              | <b>5</b>      |
| <b>Chapter:2 - Approaches to Rural Development</b><br>Gandhian Model<br>Community Development<br>Approach, Minimum Needs                                                                                                                                                                                                                                                                                                                                                                                                                             | <b>4</b>      |

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|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------|
| Approach,<br><br>Integrated Rural Development and Inclusive Growth Approach.                                                                                                                                                                                                                                |               |
| <b>Chapter:3 - Poverty and Unemployment in Rural India</b><br><br>Meaning and Measurement of<br><br>PovertyCauses of Poverty<br><br>Farm and Non-farm employment<br><br>Measurement and Types<br><br>employment<br><br>Review of Poverty Alleviation and Employment Generation Programmes in India.         | 5             |
| <b>Practicum:</b> <ul style="list-style-type: none"> <li>• Field visit to nearby village and study the poverty situation</li> <li>• Field visit to village and study the employment pattern</li> <li>• Undertake evaluation study on employment generation programmes and prepare an assignment.</li> </ul> |               |
| <b>Unit -2:</b>                                                                                                                                                                                                                                                                                             | <b>14 Hrs</b> |
| <b>Chapter 4- Rural Enterprises</b><br><br>Meaning and Importance, Classification of<br><br>MSMEProgress and Problems of MSME<br><br>Khadi and Village Industries                                                                                                                                           | 5             |
| <b>Chapter-5: Rural Banking and Finance</b><br><br>Credit Co-operative<br><br>SocietiesRegional Rural<br><br>Banks<br><br>Role of NABARD<br><br>Microfinance Institutions                                                                                                                                   | 4             |

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| <b>Chapter-6: Rural Infrastructure</b><br><br>Educational and Health<br><br>InfrastructureHousing and<br><br>Sanitation<br><br>Drinking Water Supply<br><br>Rural Transport and<br><br>CommunicationRural<br><br>Electrification                                                | 5             |
| <b>Practicum:</b><br><br>• Write an assignment on Rural infrastructure<br><br>• Write a small report on Rural Industry                                                                                                                                                          |               |
| <b>Unit -3:</b>                                                                                                                                                                                                                                                                 | <b>14 Hrs</b> |
| <b>Chapter 7- Rural Development Programmes</b><br><br>Wage Employment Programmes<br><br>Self-employment and Entrepreneurship Development<br><br>ProgrammesRural Housing Programmes<br><br>Rural Sanitation Programmes                                                           | 4             |
| <b>Chapter 8 - Rural Markets</b><br><br>Meaning and Types of Rural Markets<br><br>Defects and Government Measures for Removal of Defects in rural<br>marketsCo-operative Marketing Societies<br><br>Meaning and Importance of Regulated Markets<br><br>Digital Marketing(e-NAM) | 5             |
| <b>Chapter 9 - Rural Governance</b><br><br>Legislations powers, Functions, and sources of revenue of Panchayat Raj<br><br>InstitutionsRole of NGOs in rural development<br><br>People's participation in rural development                                                      | 5             |

**Practicum:**

- Group Discussion on Rural Governance
- Interview Gram Panchayat members and prepare brief note on their participation in rural development.
- Undertake evaluation study on rural development programmes and prepare an assignment.

**Pedagogy:** Classroom lecture, tutorials, Problem solving exercise

| Formative Assessment for C1 & C2                                             |          |    |
|------------------------------------------------------------------------------|----------|----|
| Assessment Occasion/ type                                                    | Marks    |    |
|                                                                              | C1       | C2 |
| Internal Test                                                                | 10       | 10 |
| Assignment/Seminar                                                           | 05       |    |
| Quiz                                                                         | 05       |    |
| Case study / Field work / Project work/ Industrial Visit and Preparea report | -        | 10 |
| Total                                                                        | 40 Marks |    |
| Formative Assessment as per NEP guidelines are compulsory                    |          |    |

***Note: Strictly follow the Practicum***

| References |                                                                                                                                              |
|------------|----------------------------------------------------------------------------------------------------------------------------------------------|
| 1          | Chambers, R. (1983): Rural Development: Putting the Last First, Longman, Harlow.                                                             |
| 2          | Dandekar, V.M. and N. Rath (1971): Poverty in India, GIPE, Pune.                                                                             |
| 3          | Dantwala, M. L. (1973): Poverty in India: Then and Now, 1870-1970, Macmillan, Bombay.                                                        |
| 4          | Gupta. K .R. (Ed) (2003): Rural Development in India, Atlantic Publishers and Distributors, NewDelhi.                                        |
| 5          | Jain, Gopal Lal (1997): Rural Development, Mangal Deep Publications, Jaipur,                                                                 |
| 6          | Singh, Katar (1986): Rural Development: Principles, Policies and Management, Sage Publications, New Delhi, (Second Edition).                 |
| 7          | Karalay, G. N. (2005): Integrated Approach to Rural Development: Policies, Programmes and Strategies, Concept Publishing Company, New Delhi. |
| 8          | Maheshwari, S. R. (1985): Rural Development in India, Sage, Publications New Delhi.                                                          |
| 9          | Satya Sundaram, I. (1997): Rural Development, Himalaya Publishing House, Delhi.                                                              |
| 10         | Mehta, Shiv R. (1984): Rural Development Policies and Programmes, Sage Publications, New Delhi.                                              |
| 11         | Tyagi, B. P. (1998): Agricultural Economics and Rural Development, Jai Prakash Math and Co., Meerut.                                         |
| 12         | Somashekar Ne. Thi. (2022) ಗ್ರಾಮ ಮೇಲಿನ ಅಭಿವೃದ್ಧಿ , Siddalingeshwara publication, Kalburgi.                                                   |
| 13         | H. R. Krishnaiah Gowda (2022) ಗ್ರಾಮ ಮೇಲಿನ ಅಭಿವೃದ್ಧಿ , Mysore book house publication, Mysore.                                                 |





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|----------------------------|-------------------------------|----------------------------|----------|-----------------------|
| Program Name               | <b>BA in Economics</b>        |                            | Semester | <b>Third Semester</b> |
| Course Title               | <b>Economics of Insurance</b> |                            |          |                       |
| Course Code:               | <b>OE-3.2</b>                 | No. of Credits             |          | <b>3</b>              |
| Contact hours              | <b>42 Hours</b>               | Duration of SEA/Exam       |          | <b>2 Hours</b>        |
| Formative Assessment Marks | <b>40</b>                     | Summative Assessment Marks |          | <b>60</b>             |

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| <b>Course Outcomes (COs):</b> After the successful completion of the course, the student will be able to:CO1. Gain knowledge relating to the importance of the insurance in the life of human beings.                                   |               |
| <b>Contents</b>                                                                                                                                                                                                                         | <b>42 Hrs</b> |
| <b>Unit-1: Introduction to Economics of Insurance</b>                                                                                                                                                                                   |               |
| <b>Chapter:1 - Fundamentals of Economics of insurance</b>                                                                                                                                                                               |               |
| <ul style="list-style-type: none"> <li>➤ Definition of insurance</li> <li>➤ Scope of economic of insurance</li> <li>➤ Importance of insurance</li> </ul>                                                                                |               |
| <b>Chapter:2 - The conceptual framework</b>                                                                                                                                                                                             |               |
| <ul style="list-style-type: none"> <li>➤ Brief history of insurance</li> <li>➤ Perils and risks in insurance, Classification of risks hazards</li> <li>➤ How insurance works</li> <li>➤ Classes of insurance and assumptions</li> </ul> |               |
| <b>Chapter:3 - Type of Insurance</b>                                                                                                                                                                                                    |               |
| <ul style="list-style-type: none"> <li>➤ Risk pooling and risk transfer in insurance</li> <li>➤ Social vs private insurance</li> <li>➤ Life vs non-life insurance</li> </ul>                                                            |               |
| <b>Unit -2: Insurance Planning</b>                                                                                                                                                                                                      |               |

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| <b>Chapter 4- Types of Insurance Planning</b> <ul style="list-style-type: none"> <li>➤ Wealth accumulation plan lifecycle planning</li> <li>➤ Planning for wealth accumulation</li> <li>➤ Tax advantage and tax non-advantage</li> </ul>                                                                                                                                                                                                                                                                                                   |
| <b>Chapter-5: Retirement Planning</b> <ul style="list-style-type: none"> <li>➤ Essential of individual retirement planning</li> <li>➤ Investing pension plan, basic principles of pension plans</li> <li>➤ Pension plans in India</li> </ul>                                                                                                                                                                                                                                                                                               |
| <b>Chapter-6: General Insurance Structure</b> <ul style="list-style-type: none"> <li>➤ General Insurance, concept of General Insurance</li> <li>➤ Types of General Insurance, Marine Insurance, Motors Insurance, Agricultural Insurance</li> <li>➤ Fire Insurance, Personal Accident Insurance</li> </ul>                                                                                                                                                                                                                                 |
| <b>Unit -3: personal insurance / Health Insurance</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |
| <b>Chapter 7- Essential of Life and Health Insurance</b> <ul style="list-style-type: none"> <li>➤ Fundamentals of Life and Health Insurance, functions of Life and Health Insurance</li> <li>➤ Health Insurance and Economic Development, Insurance and Farmer Security</li> </ul>                                                                                                                                                                                                                                                         |
| <b>Chapter 8 - Insurance Documentation</b> <ul style="list-style-type: none"> <li>➤ Health Insurance products, Health Insurance underwriting</li> <li>➤ Health Insurance claims</li> </ul>                                                                                                                                                                                                                                                                                                                                                 |
| <b>Chapter 9 - Insurance Legislation</b> <ul style="list-style-type: none"> <li>➤ The insurance act, 1938- Registration- Accounts and Returns</li> <li>➤ Investments -Limitation on expense of Management</li> <li>➤ Regulation of Insurance, Insurance regulation in India, role and need of regulation, history of insurance regulation in India</li> <li>➤ Insurance Reforms Development Authority (IRDA), performance of IRDA</li> <li>➤ Indian Insurance in global platform, future potential in Indian Insurance Business</li> </ul> |

**Pedagogy:** Classroom lecture, tutorials, Problem solving exercise

| Formative Assessment for C1 & C2 |       |    |
|----------------------------------|-------|----|
| Assessment Occasion/ type        | Marks |    |
|                                  | C1    | C2 |
| Internal Test                    | 10    | 10 |

|                                                                             |                                                                                                                                              |          |    |
|-----------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------|----------|----|
| Assignment/Seminar                                                          |                                                                                                                                              | 05       |    |
| Quiz                                                                        |                                                                                                                                              | 05       |    |
| Case study / Field work / Project work/ Industrial Visit and Prepare report |                                                                                                                                              | -        | 10 |
| Total                                                                       |                                                                                                                                              | 40 Marks |    |
| Formative Assessment as per NEP guidelines are compulsory                   |                                                                                                                                              |          |    |
| References                                                                  |                                                                                                                                              |          |    |
| 1                                                                           | Chambers, R. (1983): Rural Development: Putting the Last First, Longman, Harlow.                                                             |          |    |
| 2                                                                           | Dandekar, V.M. and N. Rath (1971): Poverty in India, GIPE, Pune.                                                                             |          |    |
| 3                                                                           | Dantwala, M. L. (1973): Poverty in India: Then and Now, 1870-1970, Macmillan, Bombay.                                                        |          |    |
| 4                                                                           | Gupta. K .R. (Ed) (2003): Rural Development in India, Atlantic Publishers and Distributors, NewDelhi.                                        |          |    |
| 5                                                                           | Jain, Gopal Lal (1997): Rural Development, Mangal Deep Publications, Jaipur,                                                                 |          |    |
| 6                                                                           | Singh, Katar (1986): Rural Development: Principles, Policies and Management, Sage Publications,New Delhi, (Second Edition).                  |          |    |
| 7                                                                           | Karalay, G. N. (2005): Integrated Approach to Rural Development: Policies, Programmes and Strategies, Concept Publishing Company, New Delhi. |          |    |
| 8                                                                           | Maheshwari, S. R. (1985): Rural Development in India, Sage, Publications New Delhi.                                                          |          |    |
| 9                                                                           | Satya Sundaram, I. (1997): Rural Development, Himalaya Publishing House, Delhi.                                                              |          |    |
| 10                                                                          | Mehta, Shiv R. (1984): Rural Development Policies and Programmes, Sage Publications, New Delhi.                                              |          |    |
| 11                                                                          | Tyagi, B. P. (1998): Agricultural Economics and Rural Development, Jai Prakash Math and Co.,Meerut.                                          |          |    |

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|----------------------------|---------------------------------------|----------------------------|-----------------------|
| Program Name               | <b>BA in Economics</b>                | Semester                   | <b>Third Semester</b> |
| Course Title               | <b>Economics of Human Development</b> |                            |                       |
| Course Code:               | <b>OE-3.3</b>                         | No. of Credits             | <b>3</b>              |
| Contact hours              | <b>42 Hours</b>                       | Duration of SEA/Exam       | <b>2 hours</b>        |
| Formative Assessment Marks | <b>40</b>                             | Summative Assessment Marks | <b>60</b>             |

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| <b>Course Outcomes (COs):</b> After the successful completion of the course, the student will be able to:<br>CO1. Differentiate between Human Resource Development (HRD), Human Development (HD) and HRM<br>CO2. Understand the concepts of Human security, describe dimensions of human development, and appreciate various practices and policies of human development, HDI and India.                                                            |               |
| <b>Contents</b>                                                                                                                                                                                                                                                                                                                                                                                                                                     | <b>42 Hrs</b> |
| <b>Unit-1: Introduction to Human Development</b>                                                                                                                                                                                                                                                                                                                                                                                                    | <b>12 Hrs</b> |
| <b>Chapter 1:</b> Human Growth and Human Development - Basic Needs Approach - Quality of Life Approach<br>- Capability Approach<br><b>Chapter 2:</b> Human Resource Development (HRD), Human Resource Management (HRM).<br><b>Chapter 3:</b> Human Development: meaning and definition, importance, and objectives.                                                                                                                                 |               |
| <b>Unit -2: Human Security, SDGs and Approaches to Human Development.</b>                                                                                                                                                                                                                                                                                                                                                                           | <b>12Hrs</b>  |
| <b>Chapter 4:</b> Human Security: Economic security - Food security - Health security - Environmental security<br>- Personal security - Community security - Political security.<br><b>Chapter 5:</b> Sustainable Development Goals (SDGs): Understanding the SDGs - Linkages between humandevelopment and the SDGs.<br><b>Chapter 6:</b> Indian Perspectives and Experience with Human Development: Approach to humandevelopment in national plans |               |

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| <b>Unit -3: Dimensions and Measurement of Human Development</b>                                                                                                                                                                                                                                                                                                                                                                                                                                  | <b>18 Hrs</b> |
| <b>Chapter 7:</b> Dimensions of Human Development: Empowerment - meaning and usage, Cooperation - definition and brief introduction, Equity - concept and usage, Sustainability – meaning and importance, Participation - concept, different forms of participation, Human development & Productivity - factors determining productivity.                                                                                                                                                        |               |
| <b>Chapter 8:</b> Measuring Human Development: Need for indices - limitations of per capita GDP as an indicator. Earlier indices (meaning): - Physical Quality of Life Index (PQLI), - Disability Adjusted Life Years (DALYs), - Social Capability Index. Human Development Index - HDI as compared to per capita GDP - Method of computing HDI - Critique of HDI. Other indices (meaning): Human Poverty Index (HPI)-Gender-related Development Index (GDI) - Gender Empowerment Measure (GEM). |               |
| <b>Chapter 9:</b> Selected Issues in Human Development: Impact of Globalisation on Human Development - Trade and Human Development. - Technology and Human Development                                                                                                                                                                                                                                                                                                                           |               |

**Pedagogy:** Classroom lecture, tutorials, Problem solving exercise

| Formative Assessment for C1 & C2                                             |          |    |
|------------------------------------------------------------------------------|----------|----|
| Assessment Occasion/ type                                                    | Marks    |    |
|                                                                              | C1       | C2 |
| Internal Test                                                                | 10       | 10 |
| Assignment/Seminar                                                           | 05       |    |
| Quiz                                                                         | 05       |    |
| Case study / Field work / Project work/ Industrial Visit and Preparea report | -        | 10 |
| Total                                                                        | 40 Marks |    |
| Formative Assessment as per NEP guidelines are compulsory                    |          |    |

| <b>References</b> |                                                                                                                                                        |
|-------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------|
| 1                 | Chelliah, Raja J. and R. Sudarshan (eds.), 1999, Income Poverty and Beyond: Human Development in India, UNDP, Social Science Press, New Delhi          |
| 2                 | Dev, S. Mahendra, Piush Antony, V. Gayathri, and R.P. Mamgain, 2001, Social and Economic Security in India, Institute for Human Development, New Delhi |

|   |                                                                                                                          |
|---|--------------------------------------------------------------------------------------------------------------------------|
| 3 | Government of India, National Human Development Report 2002, Planning Commission, New Delhi                              |
| 4 | Jaya Gopaki, R: Human Resource Development: Conceptual analysis and Strategies, Sterling Publishing Pvt. Ltd., New Delhi |
| 5 | Naresh Gupta (2019), Human Development in India Emerald Publishers.                                                      |
| 6 | Nadler, Leonard (2004). Corporate Human Resource Development, Van Nostrand Reinhold, ASTD, New York                      |
| 7 | Padmanabhan Nair(2007) Human Development Index: An Introduction (Economy Series), ICFAI UNIVERSITY PRESS                 |

### References

|    |                                                                                                                                   |
|----|-----------------------------------------------------------------------------------------------------------------------------------|
| 8  | Papalia, D.E. , Olds, S.W. and Feldman, R.D. (2006). Human development.9th Ed. New Delhi: TataMcGraw- Hill.                       |
| 9  | Rao, T.V and Pareek, Udai (2005) Designing and Managing Human Resource Systems, Oxford IBHPub. Pvt.Ltd., New Delhi.               |
| 10 | Rao, T.V: Readings in HRD, Oxford IBH Pub. Pvt. Ltd., New Delhi,                                                                  |
| 11 | Viramani, B.R and Seth, Parmila: Evaluating Management Development, Vision Books, New Delhi.                                      |
| 12 | Rao, T.V. (et.al)( 2003) HRD in the New Economic Environment, Tata McGraw-Hill Pub.Pvt, Ltd.,New Delhi ,.                         |
| 13 | Rao, T.V: Human Resource Development, Sage Publications, New Delhi.                                                               |
| 14 | Viramani, B.R and Rao, Kala: Economic Restructuring, Technology Transfer and Human ResourceDevelopment, Response Books, New Delhi |
| 15 | United Nations Development Programme (2005); 'Course Curriculum on Human Development-AnOutline', New Delhi                        |

### Websites:

|   |                                                                                                                                                                               |
|---|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 1 | <a href="https://www.undp.org/sustainable-development-goals?c_src=CENTRAL&amp;c_src2=GSR">https://www.undp.org/sustainable-development-goals?c_src=CENTRAL&amp;c_src2=GSR</a> |
| 2 | <a href="https://hdr.undp.org/en/2020-report">https://hdr.undp.org/en/2020-report</a>                                                                                         |
| 3 | <a href="https://www.un.org/millenniumgoals/">https://www.un.org/millenniumgoals/</a>                                                                                         |
| 4 | <a href="https://www.undp.org/india/publications/national-human-development-report-india">https://www.undp.org/india/publications/national-human-development-report-india</a> |
| 5 | <a href="https://www.sdgfund.org/mdgs-sdgs">https://www.sdgfund.org/mdgs-sdgs</a>                                                                                             |

| Journals |                                              |
|----------|----------------------------------------------|
| 1        | Indian Journal of Training and Development   |
| 2        | HRD Newsletter (NHRD Network)                |
| 3        | American Journal of Training and Development |
| 4        | Personnel Today                              |

**INTERNATIONAL ECONOMICS**  
**Open Elective Paper under NEP**

|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |                                      |
|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------|
| <b>Program Name: BA in Economics</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              | <b>Semester: Third Semester</b>      |
| <b>Course Title: International Economics</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |                                      |
| <b>Course Code: OE-3.4</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        | <b>No. of Credits 3</b>              |
| <b>Contact hours 42 Hours</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     | <b>Duration of SEA/Exam 2 hours</b>  |
| <b>Formative Assessment Marks 40</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              | <b>Summative Assessment Marks 60</b> |
| <p>Course Outcomes (COs):</p> <p>CO1. Familiarise the students with international economics.</p> <p>CO2. To develop conceptual understanding of the key concepts and practical applications of international trade</p> <p>CO3. Knowledge on trade theories helps to know its practical relevance in international trade</p> <p>CO4. Awareness on trade policies provides an insight on conflicting interests within an economy regarding trade liberalization.</p> <p>CO5. Knowledge on MNCs and international capital movements</p> <p>CO6. To provide insights on the role of WTO and BRICS in liberalising trade and increasing the volume of global trade</p> |                                      |
| <b>Contents</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   | <b>42 Hrs</b>                        |
| <b>Unit 1 Introduction to International Economics</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |                                      |
| <p><b>Chapter 1 International Trade</b> <span style="float: right;"><b>3hrs</b></span></p> <p>Meaning &amp; Definition</p> <p>Features of International Trade</p> <p>Difference between internal and international trade</p>                                                                                                                                                                                                                                                                                                                                                                                                                                      |                                      |



|                                                                                  |             |
|----------------------------------------------------------------------------------|-------------|
| <b>Chapter 2 Theories of International Trade</b>                                 | <b>6hrs</b> |
| Comparative cost theory                                                          |             |
| H-O theory                                                                       |             |
| Porter's Theory                                                                  |             |
| <b>Chapter 3 Trade Policies</b>                                                  | <b>4hrs</b> |
| Free trade policy- Meaning & Merits                                              |             |
| Policy of protection - Meaning & Merits                                          |             |
| <b>Practicum: Identify different trade barriers and their effects</b>            |             |
| <b>Unit 2 Balance of Payments and Capital Movements</b>                          |             |
| <b>Chapter 4 Balance of Payments</b>                                             | <b>5hrs</b> |
| Meaning & Definitions                                                            |             |
| Composition or Structure                                                         |             |
| Disequilibrium- types                                                            |             |
| Measures to correct Disequilibrium in Balance of Payments                        |             |
| <b>Chapter 5 International Capital movements</b>                                 | <b>5hrs</b> |
| Meaning & Types                                                                  |             |
| Factors affecting International Capital Movements                                |             |
| Advantages and Disadvantages                                                     |             |
| <b>Chapter 6 Multinational Corporations</b>                                      | <b>4hrs</b> |
| Meaning, origin & Definition                                                     |             |
| Features of MNCs                                                                 |             |
| Advantages and Disadvantages                                                     |             |
| <b>Practicum: Project work on MNCs operating in India and Indian MNCs abroad</b> |             |
| <b>Unit 3 Foreign Exchange Mechanism</b>                                         |             |
| <b>Chapter 7 Foreign Exchange Market</b>                                         | <b>5hrs</b> |
| Meaning & Features                                                               |             |
| Functions & Participants                                                         |             |

|                                                                                         |             |
|-----------------------------------------------------------------------------------------|-------------|
| FEDAI- Functions                                                                        |             |
| <b>Chapter 8 Exchange Rate Determination</b>                                            | <b>5hrs</b> |
| Meaning                                                                                 |             |
| Types of Exchange foreign rates                                                         |             |
| Purchasing power parity theory                                                          |             |
| Balance of Payments theory                                                              |             |
| <b>Chapter 9 WTO and BRICS</b>                                                          | <b>5hrs</b> |
| Organisation and Functions of WTO                                                       |             |
| TRIPS, TRIMS and GATS                                                                   |             |
| BRICS- objectives and functions                                                         |             |
| <b>Practicum: Study on various international institutions facilitating global trade</b> |             |

**Pedagogy:** Classroom lecture, tutorials, Problem solving exercise

| Formative Assessment for C1 & C2                                             |          |    |
|------------------------------------------------------------------------------|----------|----|
| Assessment Occasion/ type                                                    | Marks    |    |
|                                                                              | C1       | C2 |
| Internal Test                                                                | 10       | 10 |
| Assignment/Seminar                                                           | 05       |    |
| Quiz                                                                         | 05       |    |
| Case study / Field work / Project work/ Industrial Visit and Preparea report | -        | 10 |
| Total                                                                        | 40 Marks |    |
| Formative Assessment as per NEP guidelines are compulsory                    |          |    |

***Note: Strictly follow the Practicum***

| Sl. No | Reference                                                       |
|--------|-----------------------------------------------------------------|
| 1.     | International Trade by M L Jhingan                              |
| 2.     | International Trade and Export management by Francis Cherunilam |
| 3.     | Foreign Exchange & Risk Management by C. Jeevanandam            |
| 4.     | International Economics by Dominick Salvatore                   |
| 5.     | International Economics by D.M.Mithani                          |
| 6.     | International Economics by H.L.Bhatia                           |
| 7.     | Money, Banking and International Trade by K.P.M.Sundharam       |
| 8.     | International Economics by C.P. Kindleberger                    |
| 9.     | Money Banking and International Trade by M.L.Seth               |
| 10     | International Economics- Chandan Sharma                         |

**Urban Planning and Development**  
**Open Elective Paper under NEP**

|                                                     |                                      |
|-----------------------------------------------------|--------------------------------------|
| <b>Program Name: BA in Economics</b>                | <b>Semester: Third Semester</b>      |
| <b>Course Title: Urban Planning and Development</b> |                                      |
| <b>Course Code: OE-3.5</b>                          | <b>No. of Credits 3</b>              |
| <b>Contact hours 42 Hours</b>                       | <b>Duration of SEA/Exam 2 hours</b>  |
| <b>Formative Assessment Marks 40</b>                | <b>Summative Assessment Marks 60</b> |

**Outcomes of the Study:**

At the end of the Course the student will be able to –

- a) Get a clear picture of the dichotomy between rural areas and urban areas.
- b) Appreciate India's urban development over the years.
- c) Analyse impediments to urban development.
- d) Discern bad governance and good governance in the urban realm.

**UNIT I: EXPLORING URBAN ECONOMICS**

**Chapter 1: Nature and Scope of Urban Economics (5 Hrs.)**

Definition of Urban Area, Town, City, Urbanisation, Sub-urbanisation – characteristics of urban area - Scope and Importance of Urban Economics –Concept of Rurban

**Chapter 2: Urban Development (5 Hrs.)**

Need for urban development – Objectives of urban development- Theories: Concentric Zone Theory, Central Place Theory and Public Choice Theory.

**Chapter 3: Urban Activities (4 Hrs.)**

Urban Occupation structure – Characteristics of Urban employment – Rural-Urban Linkages – Urban Agglomeration- Smart City Mission.

**UNIT II: Urban Economy**

**Chapter 4: India's Urban Economy (4 Hrs.)**

Salient Features – Urban Policies and Programmes – Strategies – Problems and Prospects of Urban economy

**Chapter 5: Issues in Urban Infrastructural Development (5hrs.)**

Urban Poverty , Urban Unemployment. Issues in Urban infrastructure- housing, health, education and sanitation – Transport bottlenecks.

**Chapter 6: Urban Planning [5Hrs.]**

Principles of Urban Planning- Types and levels of planning- stages in planning process- Land Acquisition and Resettlement Act.

**UNIT III: Urban Issues and Governance**

**Chapter 7: Urban Environmental Problems (5hrs.)**

Urban environmental problems– slums, pollution, Solid Waste Management- Urbanisation and sustainable development.

**Chapter 8: Trade and Tourism (5 hrs.)**

Trade and Tourism in towns and cities - Wholesale trade – Retail trade – E-tailing – Urban Tourism- positive or negative effects.

**Chapter 9: Urban Administration (4hrs.)**

Urban Local Bodies - Types, Functions and Resources — Good governance - Sustainable and liveable cities – People’s participation.

**Pedagogy:** Classroom lecture, tutorials, Problem solving exercise

| Formative Assessment for C1 & C2                                             |          |    |
|------------------------------------------------------------------------------|----------|----|
| Assessment Occasion/ type                                                    | Marks    |    |
|                                                                              | C1       | C2 |
| Internal Test                                                                | 10       | 10 |
| Assignment/Seminar                                                           | 05       |    |
| Quiz                                                                         | 05       |    |
| Case study / Field work / Project work/ Industrial Visit and Preparea report | -        | 10 |
| Total                                                                        | 40 Marks |    |
| Formative Assessment as per NEP guidelines are compulsory                    |          |    |

**Note: Strictly follow the Practicum**

**Select References**

(Kindly refer latest editions of the books)

1. Arthur O'Sullivan Urban Economics
2. Bruenckner, Jan K. Lectures on Urban Economics
3. K. Siddhartha & S Mukherjee Cities, Urbanisation and Urban Systems (Settlement Geography)
4. B. Bhattacharya. Urban Development in India since Pre-Historic Times
5. R. Ramachandran. Urbanization and Urban Systems
6. C S Yadav (Ed.) Perspectives in Urban Geography
7. Bob Avis The Agglomeration
8. C. S, Yadav Rural – Urban Fringe
9. Ajay Gupta. Rural Management – CBS Publication
10. Ravindra Kumar B., Jayasheela and Vilas M. Kadrolkar (Eds.), Demographic Dividend for India: A Step Forward, New Delhi: Global Research Publications, 2012, ISBN 978-81-61-89635-4
11. Jayasheela, Ravindra Kumar B, and Vilas M. Kadrolkar, Urbanisation and Economic Transition, Global Research Publications, 2012, ISBN: 978-81-8973110-65-2

**DIGITAL ECONOMICS**

**Open Elective Paper under NEP**

|                                        |                                      |
|----------------------------------------|--------------------------------------|
| <b>Program Name: BA in Economics</b>   | <b>Semester: Third Semester</b>      |
| <b>Course Title: Digital Economics</b> |                                      |
| <b>Course Code: OE-3. 6</b>            | <b>No. of Credits 3</b>              |
| <b>Contact hours 42 Hours</b>          | <b>Duration of SEA/Exam 2 hours</b>  |
| <b>Formative Assessment Marks 40</b>   | <b>Summative Assessment Marks 60</b> |

**Course Outcome:**

- To understand how the digital economy influences markets and society.
- To get broad knowledge in digital economic activities
- For wider understanding of selected technical topics in the digital economy such as digital payments and digital currencies
- Acquire theoretical knowledge necessary to understand the nature of digital technologies and to effectively manage their implementation.
- Finding new opportunities in the Digital Economy.

**Syllabus**

**Unit 1**

**Chapter 1 Introduction to Digital Economy**

Meaning of Digital economy –Definitions-Objectives-Major attributes of digital economy-Advantages and disadvantages-Components of digital economy. 5 hrs

**Chapter 2 ICT as a factor of Digital Transformation**

Meaning of ICT- Types of ICT tools- Application of ICT in agricultural sector- Role of ICT in economic growth of India-Factors affecting the use of ICT. 5 hrs

**Chapter 3 E- Markets**

Meaning-Importance of E-markets- Traditional market Vs e-markets-Types of e-markets-working of e-markets- e-marketing mix 5 hrs

**Practicum:** Project report on e-commerce sites

## **Unit 2**

### **Chapter 4 Digital Goods and Services**

Meaning and characteristics- Externalities- Digital public goods- Benefits and examples- digital monopolies and oligopolies. 5 hrs

### **Chapter 5 Government and Digital Economy**

Role of Government in digital transformation- Regulating the digital economy- Challenges of digital transformation 4 hrs

### **Chapter 6 Digital Currency**

Meaning-types-crypto currencies, Bit coins-features-advantages and disadvantages-recent developments 4 hrs

**Practicum:** Report on crypto currencies usage in India

## **Unit 3**

### **Chapter 7 Digital Banking**

Meaning-Features-Growth of Digital Banking in India-Types of Digital banking- Mobile banking, Internet Banking, E Valet, NEFT, RTGS. 5 hrs

### **Chapter 8 Social Media and Economic growth**

Meaning-Types-Social Media platforms for business-Impact of social media on economic growth 5 hrs

### **Chapter 9 Consumer Behavior in Digital economy**

Effect of digital transformation in consumer behavior-Impact of New Consumer Protection Act of 2019 on e-commerce-the future of digital economy 4 hrs

**Practicum:** Visit the branch of any commercial bank and write a survey report on popular digital payment services offered to the customers.



**Pedagogy:** Classroom lecture, tutorials, Problem solving exercise

| Formative Assessment for C1 & C2                                             |          |    |
|------------------------------------------------------------------------------|----------|----|
| Assessment Occasion/ type                                                    | Marks    |    |
|                                                                              | C1       | C2 |
| Internal Test                                                                | 10       | 10 |
| Assignment/Seminar                                                           | 05       |    |
| Quiz                                                                         | 05       |    |
| Case study / Field work / Project work/ Industrial Visit and Preparea report | -        | 10 |
| Total                                                                        | 40 Marks |    |
| Formative Assessment as per NEP guidelines are compulsory                    |          |    |

***Note: Strictly follow the Practicum***

**References:**

1. Digital Economics: by Harald Overby and Jan A Audestad
2. Introduction to Digital Economics: Foundations, Business Models and Case Studies- by Harald Overby and Jan A Audestad
3. The Digital Economy - by Don Tapscott
4. Digital Economics: by Richard McKenzie
5. The Digital Economy- by Tim Jordan
6. Principles of Digital Economics- by Zhiyi Liu

|                            |                        |                            |                        |
|----------------------------|------------------------|----------------------------|------------------------|
| Program Name               | <b>BA in Economics</b> | Semester                   | <b>Fourth Semester</b> |
| Course Title               | <b>Macroeconomics</b>  |                            |                        |
| Course Code:               | <b>DSC-4.1</b>         | No. of Credits             | <b>3</b>               |
| Contact hours              | <b>42 Hours</b>        | Duration of SEA/Exam       | <b>2 Hours</b>         |
| Formative Assessment Marks | <b>40</b>              | Summative Assessment Marks | <b>60</b>              |

|                                                                                                                                                                                                                                                                                                                                                                                                                                               |               |
|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------|
| <b>Course Outcomes (COs):</b> After the successful completion of the course, the student will be able to:<br>CO1. Understand the Theories of National Income Accounting<br>CO2. Explain the process of Consumption and Investment Functions<br>CO3. Evaluate the Concept of Multiplier and Inflation                                                                                                                                          |               |
| <b>Content of Theory</b>                                                                                                                                                                                                                                                                                                                                                                                                                      | <b>42 Hrs</b> |
| <b>Unit–1: Theory of National Income Determination</b>                                                                                                                                                                                                                                                                                                                                                                                        | <b>14 Hrs</b> |
| <b>Chapter:1 Classical Framework:</b><br>1. Typical Features of classical theory of employment; Assumptions<br>2. Basis of Classical theory: <ul style="list-style-type: none"> <li>➤ Say's Law</li> <li>➤ Pigou's wage price flexibility</li> <li>➤ Fisher's Quantity theory of money</li> <li>➤ Knut Wicksell's loanable funds theory</li> <li>➤ Classical dichotomy and neutrality of money</li> </ul><br>3. Criticism of classical theory | <b>7</b>      |

|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |        |
|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------|
| <b>Chapter-2: The Keynesian Framework</b><br><br>1. Introductory: connecting growth of national income to development; why incomes of all fall or rise? Are income, output, and employment related?<br>2. Some Basic concepts: The idea of equilibrium and identity; ex- ante and ex-post concepts.<br>3. Aggregate Demand and its components<br>a. Consumption function: Algebraic and Graphical explanation; Marginal and Average propensity to consume                                                                                 | 7      |
| b. Investment function; savings and investment relationship.<br>4. Aggregate Supply: Meaning and graphical explanation; Effective demand<br>5. Determination of national income in Keynes' two sector economy with Aggregate Demand and Aggregate Supply with fixed prices: Analytical / Graphical and algebraic explanation; numerical problems<br>6. Determination of national income in Keynes' two sector economy with investment and savings with fixed prices: Analytical / Graphical and algebraic explanation; numerical problems |        |
| <b>Unit -2: Aggregate Consumption and Investment</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      | 15Hrs  |
| <b>Chapter-3: Theories of Determinants of Consumption:</b><br><br>1. Keynesian Psychological Law of consumption; determinants<br>2. Permanent Income hypothesis of Milton Friedman                                                                                                                                                                                                                                                                                                                                                        | 5      |
| <b>Chapter-4: Investment:</b><br><br>1. Types of investment<br>2. Determinants of investment:<br>a. rate of interest<br>b. marginal efficiency of capital: meaning and determinants;                                                                                                                                                                                                                                                                                                                                                      | 5      |
| <b>Chapter-5: Concepts of Multiplier and Accelerator</b><br><br>1. Investment Multiplier: Meaning and assumptions.<br>2. multiplier; leakages;                                                                                                                                                                                                                                                                                                                                                                                            | 5      |
| <b>Unit -3: Monetary Economics</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        | 13 Hrs |

|                                                                                                                                                                                                                                                       |   |
|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---|
| <b>Chapter-6: Money Supply:</b><br>1. Concept of Money Supply; recent measures of money supply as suggested by RBI<br>2. Determinants of money supply:<br>a. high powered money<br>b. money multiplier<br>3. The reserve ratio and deposit multiplier | 5 |
| <b>Chapter-7: Money demand:</b><br>1. Cash transactions approach (only meaning) and<br>2. Cambridge approach (Only Marshall's equation)<br>3. The liquidity preference approach of Keynes                                                             | 4 |
| <b>Chapter-8: Inflation and Unemployment:</b><br>1. Phillips Curve<br>2. Wage cut theory and employment                                                                                                                                               | 4 |

**Pedagogy:** Classroom lecture, tutorials, Problem solving exercise

| Formative Assessment for C1 & C2                                             |          |    |
|------------------------------------------------------------------------------|----------|----|
| Assessment Occasion/ type                                                    | Marks    |    |
|                                                                              | C1       | C2 |
| Internal Test                                                                | 10       | 10 |
| Assignment/Seminar                                                           | 05       |    |
| Quiz                                                                         | 05       |    |
| Case study / Field work / Project work/ Industrial Visit and Preparea report | -        | 10 |
| Total                                                                        | 40 Marks |    |
| Formative Assessment as per NEP guidelines are compulsory                    |          |    |

| References |                                                                                              |
|------------|----------------------------------------------------------------------------------------------|
| 1          | Ackley, G. (1976), Macroeconomics: Theory and Policy, Macmillan Publishing Company, NewYork. |
| 2          | Ahuja H (2016), Macro Economics- theory and policy, S Chand and Co                           |

|   |                                                                                                               |
|---|---------------------------------------------------------------------------------------------------------------|
| 3 | Dwivedi DN (2016) Macro Economics: Theory and Policy, Tata McGraw-Hill                                        |
| 4 | Heijdra, B.J. and F.V. Ploeg (2001), Foundations of Modern macroeconomics, Oxford University Press, Oxford.   |
| 5 | Keynes, J.M. (1936), The General theory of Employment, Interest and Money, Macmillan, London.                 |
| 6 | Lucas, R. (1981), Studies in Business Cycle Theory, MIT Press, Cambridge, Massachusetts                       |
|   |                                                                                                               |
| 7 | Somashekar Ne. Thi., Principles of Macroeconomics, Scientific International Pvt. Ltd., Publications New Delhi |
| 8 | Somashekar Ne. Thi., ಸ್ವಮಗ್ನ ಅರಣ್ಯಶಾಸ್ತ್ರ, Siddalingeshwara prakashana, Kalburgi.                             |
| 9 | H. R. Krishnaiah Gowda ಸ್ವಮಗ್ನ ಅರಣ್ಯಶಾಸ್ತ್ರ, Mysore book house prakashana, Mysore.                            |

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|----------------------------|---------------------------------|----------------------------|----------------|------------------------|
| Program Name               | <b>BA in Economics</b>          |                            | Semester       | <b>Fourth Semester</b> |
| Course Title               | <b>Statistics for Economics</b> |                            |                |                        |
| Course Code:               | <b>DSC-4.2</b>                  | No. of Credits             | <b>3</b>       |                        |
| Contact hours              | <b>42 Hours</b>                 | Duration of SEA/Exam       | <b>2 Hours</b> |                        |
| Formative Assessment Marks | <b>40</b>                       | Summative Assessment Marks | <b>60</b>      |                        |

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| <b>Course Outcomes (COs):</b> After the successful completion of the course, the student will be able to:<br>CO1. Understand the nature of Data and their presentation<br>CO2. Calculate Descriptive statistics like measures of central tendency and dispersion<br>CO3. Apply statistical techniques like correlation and regression in Economic analysis |               |
| <b>Content of Theory</b>                                                                                                                                                                                                                                                                                                                                   | <b>42 Hrs</b> |
| <b>Unit-1: Preliminaries</b>                                                                                                                                                                                                                                                                                                                               | <b>12 Hrs</b> |
| <b>Chapter:1 Introduction to Statistics:</b> Meaning and Importance of Statistics, Functions of Statistics, Types of Statistics: Descriptive Statistics and Inferential Statistics-Variables; Qualitative Variable and Quantitative Variable                                                                                                               | 4             |
| <b>Chapter-2:</b> Datatypes, Sources and Collection of Data: Qualitative and Quantitative Data - CrossSection Data, Time Series Data and Panel Data - Primary and Secondary sources of Data – Methods of Collecting Primary Data                                                                                                                           | 4             |
| <b>Chapter-3:</b> Tabulation and Presentation of Data: Classification and tabulation of data - Frequency distributions – Continuous and Discrete frequency distribution. Graphical presentation- Histogram- frequency polygon - Ogive Curves -Bar Diagram, Pie Chart                                                                                       | 4             |
| <b>Unit -2: Measures of Central Tendency and Dispersion</b>                                                                                                                                                                                                                                                                                                | <b>14 Hrs</b> |

|                                                                                                                                                                                              |               |
|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------|
| <b>Chapter-4: Arithmetic Average:</b> Definition of Central Tendency, Types of Central Tendency: Arithmetic Mean: Meaning and Properties of Arithmetic Mean – Computation of Arithmetic Mean | 5             |
| <b>Chapter-5: Positional Averages-Median and Mode:</b> Definition and importance of Median-Calculation of Median- Definition and importance of Mode - Calculation of Mode.                   | 4             |
| <b>Chapter-6: Dispersion:</b> Meaning of Dispersion- Measures of Dispersion- Range- Quartile deviation- mean deviation - Standard deviation - Coefficient of Variation and Their Computation | 5             |
| <b>Unit -3: Correlation, Regression and Time Series Analysis</b>                                                                                                                             | <b>16 Hrs</b> |
| <b>Chapter-7: Correlation:</b> Meaning of Correlation - Types of correlation - Methods of measuring Correlation- Karl Pearson's correlation coefficients                                     | 5             |
| <b>Chapter-8: Regression:</b> Meaning and Importance of Regression - Regression Equation - Estimation of regression equation - Applications of regression equation in Economics              | 6             |
| <b>Chapter-9: Time Series Analysis:</b> Definition of Time Series – Components of Time Series –Estimation and Forecasting of Trend                                                           | 5             |

**Pedagogy:** Classroom lecture, tutorials, Problem solving exercise

| Formative Assessment for C1 & C2                                             |          |    |
|------------------------------------------------------------------------------|----------|----|
| Assessment Occasion/ type                                                    | Marks    |    |
|                                                                              | C1       | C2 |
| Internal Test                                                                | 10       | 10 |
| Assignment/Seminar                                                           | 05       |    |
| Quiz                                                                         | 05       |    |
| Case study / Field work / Project work/ Industrial Visit and Preparea report | -        | 10 |
| Total                                                                        | 40 Marks |    |
| Formative Assessment as per NEP guidelines are compulsory                    |          |    |

|                   |
|-------------------|
| <b>References</b> |
|-------------------|

|   |                                                                                                                                                         |
|---|---------------------------------------------------------------------------------------------------------------------------------------------------------|
| 1 | Gupta S P. (2012) Statistical Methods, S. Chand and Company, New Delhi.                                                                                 |
| 2 | S. C. Gupta, (New edition) Fundamentals of Statistics, Himalaya publishing house, Mumbai.                                                               |
| 3 | S. N. Yogish, Statistical methods for Economists- Mangaldeep publications, Jaipur.                                                                      |
| 4 | Anderson, Sweeney & Williams, (2002) Statistics for Business & Economics, Thomson South-Western, Bangalore.                                             |
| 5 | Daniel and Terrel: Business Statistics for Management and Economics; oaghton Mifflin Co., Boston,Toronts, 7th Edition, 1995, PP 1 to 972 + 6 Appendices |
| 6 | Medhi, J., Statistical Methods: An Introductory Text, Wiley, 1992                                                                                       |
| 7 | Morris H. Degroot and Mark J. Schervish, "Probability and Statistics", 4th edition, 2012.                                                               |
| 8 | Teresa Bradley, Essential Statistics for Economics, Business and Management, John Willey Publisher, 2007                                                |



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|----------------------------|--------------------------|----------------------------|------------------------|
| Program Name               | <b>BA in Economics</b>   | Semester                   | <b>Fourth Semester</b> |
| Course Title               | <b>Karnataka Economy</b> |                            |                        |
| Course Code:               | <b>OE 4.1</b>            | No. of Credits             | <b>3</b>               |
| Contact hours              | <b>42 Hours</b>          | Duration of SEA/Exam       | <b>2 Hours</b>         |
| Formative Assessment Marks | <b>40</b>                | Summative Assessment Marks | <b>60</b>              |

|                                                                                                                                                                                                                                                                                                                                                                                                   |               |
|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------|
| <b>Course Outcomes (COs):</b> After the successful completion of the course, the student will be able to:<br>CO1. Understand the nature of economic growth and problems of Karnataka state.<br>CO2. Explain the process of structural growth in Karnataka Economy<br>CO3. Evaluate the policies and programmes undertaken by the Govt. of Karnataka for bringing about socio-economic development |               |
| <b>Contents</b>                                                                                                                                                                                                                                                                                                                                                                                   | <b>42 Hrs</b> |
| <b>Unit-1: Karnataka Economy – An overview</b>                                                                                                                                                                                                                                                                                                                                                    | <b>12 Hrs</b> |
| <b>Chapter:1 Characteristics of Karnataka Economy</b> <ul style="list-style-type: none"> <li>○ Features of Karnataka Economy</li> <li>○ Trends and sectoral distribution of State Domestic Product and Per Capita Income</li> <li>○ Measures to redress regional imbalances – Dr. Nanjundappa Committee Report, Article 371J</li> </ul>                                                           | <b>5</b>      |
| <b>Chapter-2: Human Resources</b> <ul style="list-style-type: none"> <li>○ Human Resources: importance, Size and Health indicators</li> <li>○ Human Development Index</li> <li>○ Poverty and Unemployment– Eradication Programmes</li> </ul>                                                                                                                                                      | <b>4</b>      |
| <b>Chapter-3: Natural Resources Management</b> <ul style="list-style-type: none"> <li>○ Natural Resources: Importance and volume of different natural resources</li> <li>○ Karnataka Environmental Policy</li> </ul>                                                                                                                                                                              | <b>3</b>      |
| <b>Practicum:</b> conduct field visit to Forest/Reservoir/Mining and prepare the report                                                                                                                                                                                                                                                                                                           |               |
| <b>Unit -2: Agriculture, Rural development, and Industries in Karnataka</b>                                                                                                                                                                                                                                                                                                                       | <b>18 Hrs</b> |

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|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------|
| <b>Chapter-4: Agriculture</b> <ul style="list-style-type: none"> <li>○ Problems in Agriculture</li> <li>○ Land Reforms</li> </ul>                                                                                                                                                                                        | 7             |
| <ul style="list-style-type: none"> <li>○ Cropping Pattern</li> <li>○ Irrigation: importance, important irrigation projects and watershed development projects.</li> <li>○ Farmers Suicide – Causes and Solutions</li> </ul>                                                                                              |               |
| <b>Chapter-5: Rural Development</b> <ul style="list-style-type: none"> <li>○ Public Distribution System</li> <li>○ Rural Development Programmes (brief)</li> <li>○ Government Schemes for Rural Women</li> </ul>                                                                                                         | 4             |
| <b>Chapter-6: Industries in Karnataka</b> <ul style="list-style-type: none"> <li>○ Major Industries in Karnataka - Problems and Prospects</li> <li>○ MSMEs - Problems and Measures</li> <li>○ IT Industries in Karnataka</li> <li>○ Industrial Finance in Karnataka</li> <li>○ Industrial Policy of Karnataka</li> </ul> | 7             |
| <b>Practicum:</b> visit to industrial units in local area and prepare the report/Trace-out the impact of Prof. D.<br>M. Nanjundappa Committee report                                                                                                                                                                     |               |
| <b>Unit -3: Infrastructure and Finance in Karnataka</b>                                                                                                                                                                                                                                                                  | <b>12 Hrs</b> |
| <b>Chapter-7: Economic Infrastructure</b> <ul style="list-style-type: none"> <li>○ Transportation: Road, Rail, Water and Air Transport</li> <li>○ Information and Communication Technology Facilities</li> </ul>                                                                                                         | 3             |
| <b>Chapter-8: Social Infrastructure</b> <ul style="list-style-type: none"> <li>○ Drinking Water</li> <li>○ Housing and Sanitation</li> <li>○ Health and Education</li> <li>○ Rural Electrification</li> </ul>                                                                                                            | 4             |
| <b>Chapter-9: State Finance</b> <ul style="list-style-type: none"> <li>○ Sources of Revenue: Direct and Indirect Taxes</li> <li>○ Impact of GST on Karnataka economy</li> <li>○ State Expenditure</li> <li>○ State Finance Commission</li> <li>○ Current State Budget (Brief)</li> </ul>                                 | 5             |
| <b>Practicum:</b> Discussion on State budget                                                                                                                                                                                                                                                                             |               |

## Pedagogy

| Formative Assessment for C1 & C2                                             |          |    |
|------------------------------------------------------------------------------|----------|----|
| Assessment Occasion/ type                                                    | Marks    |    |
|                                                                              | C1       | C2 |
| Internal Test                                                                | 10       | 10 |
| Assignment/Seminar                                                           | 05       |    |
| Quiz                                                                         | 05       |    |
| Case study / Field work / Project work/ Industrial Visit and Preparea report | -        | 10 |
| Total                                                                        | 40 Marks |    |
| Formative Assessment as per NEP guidelines are compulsory                    |          |    |

**Note: Strictly follow the Practicum**

| References |                                                                                                         |
|------------|---------------------------------------------------------------------------------------------------------|
| 1          | Government of Karnataka, Economic Survey [Various Issues]                                               |
| 2          | Planning Department, Annual Publication, Government of Karnataka.                                       |
| 3          | Karnataka at Glance, Annual Publication Government of Karnataka.                                        |
| 4          | Madaiah M & Ramapriya. Karnataka Economy Growth: Issues and Development, Himalaya Pub.,House, NewDelhi. |
| 5          | Adul Aziz and K.G. Vasanti. (Eds) Karnataka Economy.                                                    |
| 6          | Government District Development Reports                                                                 |
| 7          | Hanumantha Rao. Regional Disparities and Development in Karnataka.                                      |
| 8          | Krishnaiah Gowda H.R. Karnataka Economy, Spandana Publications, Bangalore                               |
| 9          | Somashekar Ne. Thi., ಕರ್ನಾಟಕ ಆರ್ಥಿಕತೆ, Siddalingeshwara publications, Kalburgi.                         |
| 10         | Nanjundappa D.M. Some Aspects of Karnataka Economy.                                                     |
| 11         | Puttaswamiah K. Karnataka Economy, Two Volume                                                           |

|                            |                                  |                            |          |                        |
|----------------------------|----------------------------------|----------------------------|----------|------------------------|
| Program Name               | <b>BA in Economics</b>           |                            | Semester | <b>Fourth Semester</b> |
| Course Title               | <b>Entrepreneurial Economics</b> |                            |          |                        |
| Course Code:               | <b>OE 4.2</b>                    | No. of Credits             |          | <b>3</b>               |
| Contact hours              | <b>42 Hours</b>                  | Duration of SEA/Exam       |          | <b>2 Hours</b>         |
| Formative Assessment Marks | <b>40</b>                        | Summative Assessment Marks |          | <b>60</b>              |

|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |               |
|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------|
| <b>Course Outcomes (COs):</b> After the successful completion of the course, the student will be able to:<br>CO1. Start own business as Entrepreneur<br>CO2. Enabling the students to find career opportunities in business.<br>CO3. To enable the students to gain knowledge and skills needed to run a business successfully.                                                                                                                                                                                                                                                                                    |               |
| <b>Contents</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    | <b>42 Hrs</b> |
| <b>Unit-1: Entrepreneur and Entrepreneurship</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   | <b>12 Hrs</b> |
| <b>Chapter 1:</b> Entrepreneur and Entrepreneurship – Meaning, Definitions, Evolution, types- Characteristics, qualities, functions of entrepreneur- Distinction between entrepreneur and manager, Distinction between entrepreneur and intrapreneur,<br><br><b>Chapter 2:</b> Role and importance of Entrepreneurship in economic development: Role and importance- Factors influencing entrepreneurship'- Psychological, social, Economic and Environmental.<br><br><b>Chapter 3:</b> New generations of entrepreneurship viz. social, Health, Tourism and Women entrepreneurship; Barriers to entrepreneurship. |               |
| <b>Unit -2: Launching Entrepreneurial Ventures</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 | <b>18 Hrs</b> |

**Chapter 4:** Generation of ideas: Methods and process - sources of ideas - screening process- Assessing Opportunities-Challenges, pitfalls and critical factors of new venture;

**Chapter 5:** Business Plan- New Ventures: Steps involved in setting up a Business – identifying, selecting a Good Business opportunity, Market Survey and Research, Techno-Economic Feasibility Assessment.

**Chapter 6:** Role of Innovation & Creativity: Innovation- Meaning and importance of innovation; Types of innovation; Sources of innovation; Conditions for effective innovation at Organization level;

**Chapter 7:** Creativity: Concept and process of creativity; role and importance of creativity and mental blocks to creativity; branding, trademarks, patents, copyrights, and registered design protection-Methods of protecting innovation and creativity.

**Unit -3: Business and Entrepreneurial development**

**12 Hrs**

**Chapter 8:** Entrepreneur Assistance: Assistance to an entrepreneur-Industrial Park (Meaning, features, & examples)-Special Economic Zone (Meaning, features & examples)-Financial assistance by different agencies-License, Environmental Clearance, e-tender process, Excise exemptions and concession, Exemption from income tax -Quality Standards with special reference to ISO.

**Chapter 9:** Business and Entrepreneurial development - Determining and acquiring required resources (Financial, Physical and Human): Search for entrepreneurial capital- Debt vs. Equity; Venture Capital Market; Angel Financing and Alternative sources of finance for Entrepreneurs. Entrepreneurship development programme (EDP) in India– Objectives, Phases, and inputs of EDP; - Government initiatives for entrepreneurship – Make in India, Start-up India, MUDRA etc.

**Pedagogy:** Classroom lecture, tutorials, Problem solving exercise

| Formative Assessment for C1 & C2 |       |    |
|----------------------------------|-------|----|
| Assessment Occasion/ type        | Marks |    |
|                                  | C1    | C2 |
| Internal Test                    | 10    | 10 |
| Assignment/Seminar               | 05    |    |
| Quiz                             | 05    |    |

|                                                                                |          |    |
|--------------------------------------------------------------------------------|----------|----|
| Case study / Field work / Project work/ Industrial Visit and<br>Prepara report | -        | 10 |
| Total                                                                          | 40 Marks |    |
| Formative Assessment as per NEP guidelines are<br>compulsory                   |          |    |

| References |                                                                                                                             |
|------------|-----------------------------------------------------------------------------------------------------------------------------|
| 1          | Donald F Kuratko, “Entrepreneurship – Theory, Process and Practice”, 9 th Edition, CengageLearning, 2014.                   |
| 2          | Khanka. S.S., “Entrepreneurial Development” S.Chand & Co. Ltd., Ram Nagar, New Delhi, 2013.                                 |
| 3          | Kuratko and Rao, Entrepreneurship: A South Asian Perspective; Ferrell, Fraedrich, Farrell, BusinessEthics, Cengage Learning |
| 4          | Entrepreneurship, R. Saibaba, Kalyani Publishers, New Delhi.                                                                |
| 5          | Entrepreneurship Development and Business Ethics, Sanjeet Sharma – V.K. Global Pvt. Ltd., NewDelhi                          |
| 6          | SS Khanka, Entrepreneurial Development, S. Chand & Co, Delhi.                                                               |

| References |                                                                                                                                     |
|------------|-------------------------------------------------------------------------------------------------------------------------------------|
| 7          | Desai, Vasant. Dynamics of Entrepreneurial Development and Management. Mumbai, HimalayaPublishing House                             |
| 8          | Plsek, Paul E. Creativity, Innovation and Quality (Eastern Economic Edition), New Delhi:Prentice-Hall of India. ISBN-81-203-1690-8. |
| 9          | Singh, Nagendra P. Emerging Trends in Entrepreneurship Development. New Delhi: ASEED.                                               |
| 10         | Entrepreneurship Development and Business Ethics - M K Nabi, K C Rout, Vrinda Publications (P)Ltd                                   |
| 11         | Robert Hisrich and Michael Peters, Entrepreneurship, Tata Mc Graw– Hill Vasant Desai, Entrepreneurship                              |
| 12         | Marc J Dollinger, Entrepreneurship – Strategies and Resources, Pearson Education                                                    |
| 13         | Venkateshwara Rao and Udai Pareek,(Eds)Developing Entrepreneurship-A Handbook                                                       |
| 14         | Ravi J. Mathai, Rural Entrepreneurship A Framework in Development Entrepreneurship – Ahandbook                                      |

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|----------------------------|--------------------------|----------------------------|----------|------------------------|
| Program Name               | <b>BA in Economics</b>   |                            | Semester | <b>Fourth Semester</b> |
| Course Title               | <b>Economics and Law</b> |                            |          |                        |
| Course Code:               | <b>OE 4.3</b>            | No. of Credits             |          | <b>3</b>               |
| Contact hours              | <b>42 Hours</b>          | Duration of SEA/Exam       |          | <b>2 Hours</b>         |
| Formative Assessment Marks | <b>40</b>                | Summative Assessment Marks |          | <b>60</b>              |

**Course Outcomes (COs):** After the successful completion of the course, the student will be able to:

- CO1. Comprehend the basic economic issues affecting the economy along with the related legal provisions
- CO2. Acquire knowledge on the basic provisions of law relating to consumer activities, business organizations, environment
- CO3. To appreciate the understanding the law framework in order to frame the economics model close to reality.
- CO4. To enable the students to understand the consequences of legal rules, primarily as an exercise in applied microeconomics, macroeconomics, industrial and international economics.

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|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------|
| <b>Contents</b>                                                                                                                                                                                                             | <b>42 Hrs</b> |
| <b>Unit-1: Economic analysis of law</b>                                                                                                                                                                                     | <b>14 Hrs</b> |
| <b>Chapter 1: Introduction to legal reasoning</b> <ul style="list-style-type: none"> <li>• Efficiency.</li> <li>• Markets and efficiency.</li> <li>• Market failure.</li> <li>• Coase theorem and related ideas,</li> </ul> | 5             |



|                                                                                                                                                                                                                                                           |               |
|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------|
| <b>Chapter 2: welfare economics</b> <ul style="list-style-type: none"> <li>• Compensation principles.</li> <li>• Social welfare function.</li> <li>• Maximization problem;</li> </ul>                                                                     | 4             |
| <b>Chapter 3: Economic Reasoning</b> <ul style="list-style-type: none"> <li>• Nature of economic reasoning.</li> <li>• Economic approach to law</li> <li>• History</li> <li>• Criticism.</li> </ul>                                                       | 5             |
| <b>Practicum:</b> <ol style="list-style-type: none"> <li>1. Group Discussions on Economic reasoning</li> <li>2. Assignment on Coase theorem and related issues</li> </ol>                                                                                 |               |
| <b>Unit -2: An Introduction to Law and Legal Institutions</b>                                                                                                                                                                                             | <b>12 Hrs</b> |
| <b>Chapter 4: Law</b> <ul style="list-style-type: none"> <li>• Definition</li> <li>• Territorial Nature of Law</li> <li>• Kinds of Law</li> <li>• General Law and Special Law</li> <li>• Kinds of Special Law</li> </ul>                                  | 4             |
| <b>Chapter 5: Civil law and the and the Common Law Traditions</b> <ul style="list-style-type: none"> <li>• The institutions of the federal and State Court systems;</li> <li>• The nature of legal dispute,</li> <li>• How legal rules evolve.</li> </ul> | 4             |
| <b>Practicum:</b> <ol style="list-style-type: none"> <li>1. Group Discussions on Civil law and the and the Common Law Traditions</li> <li>2. Assignment on the different kinds of Law</li> </ol>                                                          |               |
| <b>Unit -3: Economic Laws</b>                                                                                                                                                                                                                             | <b>16 Hrs</b> |

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| <p><b>Chapter 6: Law Relating to Consumer Activities</b></p> <ul style="list-style-type: none"> <li>• Bargaining theory.</li> <li>• Economic theory of contract.</li> <li>• Defining tort law,</li> <li>• Economics of tort liability.</li> <li>• Definition of Consumer</li> </ul>                                                                                                                                                          | 5 |
| <ul style="list-style-type: none"> <li>• Consumer protection; The Consumer Protection Act, 2019</li> <li>• Consumer courts.</li> </ul>                                                                                                                                                                                                                                                                                                       |   |
| <p><b>Chapter 7: Law of Business Organizations</b></p> <ul style="list-style-type: none"> <li>• Structure of firm — Kinds, Corporations,</li> <li>• Capital, Shares, Debentures, Insiders' trading,</li> <li>• RBI, IRDA, MRTP, Role of SEBI,</li> </ul>                                                                                                                                                                                     | 5 |
| <p><b>Chapter 8: Macroeconomics and Law</b></p> <ul style="list-style-type: none"> <li>• Inequality; Contract theory of Distributive justice</li> <li>• Economic and social costs of poverty</li> <li>• Wealth distribution by Liability Rules</li> <li>• Taxation and efficiency</li> <li>• National and global environmental problems and international environmental agreements</li> </ul> <p>— their legal and economic implications</p> | 6 |

**Practicum**

1. Hold the moot court in the classroom and let there be discussion consisting of at least two or more different views on National and Global environment problems and acts
2. Discuss the case studies on Economic and social costs of poverty and consumer court judgements protecting the consumers

**Pedagogy:** Classroom lecture, tutorials, Problem solving exercise

| Formative Assessment for C1 & C2                                               |          |    |
|--------------------------------------------------------------------------------|----------|----|
| Assessment Occasion/ type                                                      | Marks    |    |
|                                                                                | C1       | C2 |
| Internal Test                                                                  | 10       | 10 |
| Assignment/Seminar                                                             | 05       |    |
| Quiz                                                                           | 05       |    |
| Case study / Field work / Project work/ Industrial Visit and<br>Prepara report | -        | 10 |
| Total                                                                          | 40 Marks |    |
| Formative Assessment as per NEP guidelines are compulsory                      |          |    |

**Note: Strictly follow the Practicum**

| References |                                                                                                                                     |
|------------|-------------------------------------------------------------------------------------------------------------------------------------|
| 1          | Bouckaert, B. and G. De Geest (Ed.) (1999), Encyclopaedia of Law and Economics, (Volume I to V), Edward Elgar Publishing Ltd., U.K. |
| 2          | Cooter, R.D. and T.S. Ulen, (2000), Law and Economics, (3rd Edition), Addison Wesley, New York.                                     |
| 3          | Dan-Schmidt, K.G. and T.S. Ulen (Ed.) (2000), Law and Economic Anthology, Addison Wesley, New York.                                 |
| 4          | Newman, P. (Ed.) (1998), The New Palgrave Dictionary of Economics and Law, Stockton Press, New York.                                |
| 5          | Oliver, J.M. (1979), Law and Economics, George Allen and Unwin, London.                                                             |

|   |                                                                                                         |
|---|---------------------------------------------------------------------------------------------------------|
| 6 | Posner, R.A. (1998), <i>Economic Analysis of Law</i> , (5th Edition), Little Brown, Boston.             |
| 7 | Posner, R.A. and F. Parisi (Eds.) (1997), <i>Law and Economics</i> , Edward Elgar Publishing Ltd., U.K. |
| 8 | Massey, I.P. (1995), <i>Administrative Law</i> , Eastern Book Company, Lucknow.                         |
| 9 | Indian Law Institute, <i>Annual Survey of Indian Law</i> , Indian Law Institute, New Delhi.             |

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|----------------------------|-------------------------|----------------------------|----------|------------------------|
| Program Name               | <b>BA in Economics</b>  |                            | Semester | <b>Fourth Semester</b> |
| Course Title               | <b>Economics of GST</b> |                            |          |                        |
| Course Code:               | <b>OE 4.4</b>           | No. of Credits             |          | <b>3</b>               |
| Contact hours              | <b>42 Hours</b>         | Duration of SEA/Exam       |          | <b>2 Hours</b>         |
| Formative Assessment Marks | <b>40</b>               | Summative Assessment Marks |          | <b>60</b>              |

**Course Outcomes (COs):** After the successful completion of the course, the student will be able to:

CO1. Acquire knowledge on indirect taxes with special reference to GST

CO2. Acquire the theoretical and application knowledge of GST and its Evolution in India

CO3. To enable the students to understand the GST Law, ITC, Valuation of supply and returns

CO4. Simple calculation of GST and Input Tax Credit, Valuation of Supply (Numerical on valuation and calculation of tax)

| <b>Contents</b>                                                                                                                                                                                                                                                                                                    | <b>Hrs</b>    |
|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------|
| <b>Unit–1: Introduction to Economics of GST</b>                                                                                                                                                                                                                                                                    | <b>14 Hrs</b> |
| <b>Chapter 1: Indirect taxes before GST</b> <ul style="list-style-type: none"> <li>Indirect Taxes-Meaning, Types with examples</li> <li>Constitutional framework of Indirect Taxes before GST (Taxation Powers of Union &amp; State Government)</li> <li>Concept of VAT: Meaning, Variants and Methods;</li> </ul> | 5             |

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| <b>Chapter 2: Reforms in Indirect Taxes</b> <ul style="list-style-type: none"> <li>Major Defects in the structure of Indirect Taxes prior to GST; Need for Tax reforms</li> <li>Kelkar committee on Tax Reforms</li> </ul>                                                                                                          | 4             |
| <b>Chapter 3: Introduction to GST</b> <ul style="list-style-type: none"> <li>Rationale for GST;</li> <li>Constitution [101st Amendment] Act, 2016;</li> <li>GST- Meaning, Overview of GST</li> <li>Taxes subsumed under GST</li> <li>Territorial Jurisdiction of GST</li> </ul>                                                     | 5             |
| <ul style="list-style-type: none"> <li>Multiple rates of GST</li> <li>Recent reforms in GST</li> </ul>                                                                                                                                                                                                                              |               |
| <b>Practicum:</b> <ol style="list-style-type: none"> <li>Group Discussions on Indirect Taxes defects prior to GST</li> <li>Assignment on Types of Indirect Taxes prior to GST and After introduction of GST</li> </ol>                                                                                                              |               |
| <b>Unit – 2 Fundamentals of GST</b>                                                                                                                                                                                                                                                                                                 | <b>12 Hrs</b> |
| <b>Chapter 4: GST Structure in India,</b> <ul style="list-style-type: none"> <li>GST: Advantages and Disadvantages</li> <li>One Nation-One Tax,</li> <li>Structure of GST;</li> <li>Features of Single and Dual GST Model</li> </ul>                                                                                                | 4             |
| <b>Chapter 5: Dual GST Mode and GST Council</b> <ul style="list-style-type: none"> <li>Dual GST Mode in India: I SGST, CGST, UTGST &amp; IGST);</li> <li>Goods and Services Tax Network [GSTN],</li> <li>GST Council; Creation, Members, Decisions, Compensation to states.</li> <li>GST Network,</li> <li>Registration,</li> </ul> | 4             |

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| <b>Practicum:</b><br><br>1. Group Discussions on advantages and disadvantages of GST<br><br>2. Hold the moot of GST Council in the class room and decide the different slabs of GST                                                                                                                                                                                                                                                                                                                         | 4             |
| <b>Unit -3: Taxes and Duties</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                            | <b>16 Hrs</b> |
| <b>Chapter 6: Transactions and taxes covered and not covered</b><br><br><ul style="list-style-type: none"> <li>Transactions and taxes covered under GST</li> <li>Taxes and duties outside the purview of GST</li> <li>Tax structure Computation</li> <li>Administration of Tax on items containing alcohol, petroleum products, tobacco products</li> <li>Taxation on services</li> </ul>                                                                                                                   | 4             |
| <b>Chapter 7: Levy and Collection of Tax</b><br><br><ul style="list-style-type: none"> <li>Taxable event- “Supply” of Goods and Services</li> <li>Place of Supply: Within state, Interstate Levy and Collection</li> <li>Import and Export; Time of supply</li> <li>Valuation for GST- Valuation rules,</li> <li>Taxability of reimbursement of expenses;</li> <li>Exemption from GST: Small supplies and Composition Scheme Classification of Goods and Services: Composite and Mixed Supplies.</li> </ul> | 6             |

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|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---|
| <b>Chapter 8: Input Tax Credit</b> <ul style="list-style-type: none"> <li>Eligible and Ineligible Input Tax Credit</li> <li>Apportionments of Credit and Blocked Credits</li> <li>Tax Credit in respect of Capital Goods</li> <li>Recovery of Excess Tax Credit</li> <li>Availability of Tax Credit in special circumstances</li> <li>Transfer of Input Credit (Input Service Distribution)</li> <li>Payment of Taxes; Refund; Doctrine of unjust enrichment</li> </ul> | 6 |
| <b>Practicum</b> <ol style="list-style-type: none"> <li>Simple illustrations on calculation of GST and Input Tax Credit,</li> <li>Valuation of Supply (Numerical on valuation and calculation of tax)</li> <li>Simple calculation Adjustment of Input tax credit against output CGST, SGST, IGST.</li> </ol>                                                                                                                                                            |   |

**Pedagogy:** Classroom lecture, tutorials, Problem solving exercise

| Formative Assessment for C1 & C2                                             |          |    |
|------------------------------------------------------------------------------|----------|----|
| Assessment Occasion/ type                                                    | Marks    |    |
|                                                                              | C1       | C2 |
| Internal Test                                                                | 10       | 10 |
| Assignment/Seminar                                                           | 05       |    |
| Quiz                                                                         | 05       |    |
| Case study / Field work / Project work/ Industrial Visit and Preparea report | -        | 10 |
| Total                                                                        | 40 Marks |    |
| Formative Assessment as per NEP guidelines are compulsory                    |          |    |

**Note: Strictly follow the Practicum**

| <b>References</b> |                                             |
|-------------------|---------------------------------------------|
| 1                 | The Central Goods and Services Tax, 2017    |
| 2                 | The Integrated Goods and Services Tax, 2017 |



|   |                                                                                                                 |
|---|-----------------------------------------------------------------------------------------------------------------|
| 3 | The Union Territory Goods and Services Tax, 2017                                                                |
| 4 | The Goods and Services Tax (Compensation to States), 2017                                                       |
| 5 | The Constitution (One hundred and First Amendment) Act, 2016                                                    |
| 6 | Gupta, S.S. , <i>GST- How to meet your obligations (April 2017)</i> , Taxmann Publications                      |
| 7 | Datey,V.S. (2019) . <i>Indirect Taxation</i> . New Delhi <i>Vastu and Sevakar Vidhan</i> by Government of India |
| 8 | Mehrotra, H.C. & Goyal, S.P.(2019), <i>Indirect Taxes</i> , Agra: Bhawan Publications.                          |

**Public Economics**

|                                                                                                                                                                                                                                                                                                                                                                                                |                                      |
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| <b>Program Name: BA in Economics</b>                                                                                                                                                                                                                                                                                                                                                           | <b>Semester: Fourth Semester</b>     |
| <b>Course Title: Public Economics</b>                                                                                                                                                                                                                                                                                                                                                          |                                      |
| <b>Course Code: OE-4.5</b>                                                                                                                                                                                                                                                                                                                                                                     | <b>No. of Credits 3</b>              |
| <b>Contact hours 42 Hours</b>                                                                                                                                                                                                                                                                                                                                                                  | <b>Duration of SEA/Exam 2 hours</b>  |
| <b>Formative Assessment Marks 40</b>                                                                                                                                                                                                                                                                                                                                                           | <b>Summative Assessment Marks 60</b> |
| <p>Course Outcomes (COs):</p> <p>CO1. Understand the significance of Public economics in developing economies.</p> <p>CO2. Understanding the public sector activities.</p> <p>CO3. Understand and analyse the different canons of taxation.</p> <p>CO4. Knowledge on Public Expenditure, its principles and classifications</p> <p>CO5. Understand the mechanics of the government budget.</p> |                                      |
| <b>Contents</b>                                                                                                                                                                                                                                                                                                                                                                                | <b>42 Hrs</b>                        |
| <b>Unit 1 Nature &amp; Scope of Public Economics</b>                                                                                                                                                                                                                                                                                                                                           |                                      |
| <p><b>Chapter 1 Public Economics</b> <span style="float: right;"><b>4hrs</b></span></p> <p>Meaning, Definitions &amp; Scope of Public Economics</p> <p>Components of Public Economics</p> <p>Fiscal functions of the government</p>                                                                                                                                                            |                                      |
| <p><b>Chapter 2 Public finance</b> <span style="float: right;"><b>4hrs</b></span></p> <p>Difference between Public Finance and Private Finance</p>                                                                                                                                                                                                                                             |                                      |

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|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------|
| Role of Public Finance in Developing Economies<br>Public goods- features<br>Externalities                                                                                                                                                     |             |
| <b>Chapter 3 Principle of Public Finance</b><br>Principle of Maximum Social Advantage-<br>Pigou and Musgrave's version                                                                                                                        | <b>3hrs</b> |
| <b>Practicum: Project work on, Private Goods and Public Utilities- Types</b>                                                                                                                                                                  |             |
| <b>Unit 2 Public Revenue, Public Expenditure and Public Debt</b>                                                                                                                                                                              |             |
| <b>Chapter 4 Public Revenue</b><br>Meaning<br>Sources of Public Revenue- Tax and Non- tax sources<br>Canons of taxation- Adam Smith & Bastable's canons<br>Taxable Capacity- Meaning & Determinants<br>Direct Tax: Types<br>Indirect Tax: GST | <b>6hrs</b> |
| <b>Chapter 5 Public Expenditure</b><br>Causes for increase in public expenditure<br>Types or Classification of public expenditure<br>Principles of public expenditure                                                                         | <b>5hrs</b> |
| <b>Chapter 6 Public Debt</b><br>Meaning & Sources<br>Types of Public debt<br>Methods of public debt redemption                                                                                                                                | <b>5hrs</b> |
| <b>Practicum: Discussion on GST Collection &amp; Its Impact</b>                                                                                                                                                                               |             |
| <b>Unit 3 Budget and Financial Administration</b>                                                                                                                                                                                             |             |

|                                                                                                                                                                  |             |
|------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------|
| <b>Chapter 7 Budget</b><br>Meaning & Types of Budget<br>Components of Budget<br>Budgetary deficit- types                                                         | <b>5hrs</b> |
| <b>Chapter 8 Fiscal Policy</b><br>Meaning & Objectives<br>Instruments of Fiscal Policy<br>Role of fiscal policy in developing economies                          | <b>5hrs</b> |
| <b>Chapter 9 Deficit Financing</b><br>Meaning & Definitions<br>Role of Deficit Financing in developing economies<br>Safe limits of deficit financing<br>FRBM Act | <b>5hrs</b> |

**Pedagogy:** Classroom lecture, tutorials, Problem solving exercise

| Formative Assessment for C1 & C2                                             |          |    |
|------------------------------------------------------------------------------|----------|----|
| Assessment Occasion/ type                                                    | Marks    |    |
|                                                                              | C1       | C2 |
| Internal Test                                                                | 10       | 10 |
| Assignment/Seminar                                                           | 05       |    |
| Quiz                                                                         | 05       |    |
| Case study / Field work / Project work/ Industrial Visit and Preparea report | -        | 10 |
| Total                                                                        | 40 Marks |    |
| Formative Assessment as per NEP guidelines are compulsory                    |          |    |

***Note: Strictly follow the Practicum***

| <b>Sl. No</b> | <b>References</b> |
|---------------|-------------------|
|               |                   |

|           |                                                                              |
|-----------|------------------------------------------------------------------------------|
| <b>1</b>  | Public Economics- B P Thyagi                                                 |
| <b>2</b>  | Public Finance in Theory and Practice- Dr. S K Singh                         |
| <b>3</b>  | Public Finance and Fiscal Policy- Rabindra Kumar Choudhury                   |
| <b>4</b>  | Public Finance- R K Lekhi & Joginder Singh                                   |
| <b>5</b>  | Public Finance- Ambar Ghosh & Chandana Ghosh                                 |
| <b>6</b>  | Public Finance Theory and Approach- N Radhakrishnan                          |
| <b>7</b>  | Public Finance In Theory and Practice- Richard A Musgrave & Peggy B Musgrave |
| <b>8</b>  | Public Finance- H L Bhatia                                                   |
| <b>9</b>  | Public Finance- David N Hyman                                                |
| <b>10</b> | Economics of Public Finance- Om Prakash                                      |

**POPULATION STUDIES**  
**Open Elective Paper under NEP**

|                                         |                                      |
|-----------------------------------------|--------------------------------------|
| <b>Program Name: BA in Economics</b>    | <b>Semester: Fourth Semester</b>     |
| <b>Course Title: Population Studies</b> |                                      |
| <b>Course Code: OE-4.6</b>              | <b>No. of Credits 3</b>              |
| <b>Contact hours 42 Hours</b>           | <b>Duration of SEA/Exam 2 hours</b>  |
| <b>Formative Assessment Marks 40</b>    | <b>Summative Assessment Marks 60</b> |

**Outcomes of the Study**

- OC 1. Understand the theories of population
- OC 2 Get an idea of the concepts like nuptial rate fertility rate, maternal mortality rate, reproductive rate, etc.
- OC 3 Identify the relationship between population and employment
- OC 4 Appreciate the population policies as they have evolved
- OC 5 Attain capability to contribute to do population research

**Syllabus**

**UNIT I: INTRODUCTION [12]**

**Chapter 1: Source of Population Data (6)**

- World: Census, Registration of vital events. Demographic Surveys, Population Registers.
- India: Census, Sample Registration Scheme, and Civil Registration System (CRS), National Sample Survey (NSS)

**Chapter 2: Theories of Population (4)**

- Malthusian Theory

- Theory of Optimum Population
- Theory of Demographic Transition

### **Chapter 3: Change in Population (4)**

- Composition of India's population.
- Demographic Composition.
- Social Composition.
- Economic Composition.

### **UNIT II: Chapter 4: Methods of Demographic/Population Analysis (6)**

- Rate of Population Growth: Arithmetic, Exponential, and Geometric
- Cohort and cross-sectional indicators.
- Crude rates and standardized methods.
- Methods of population projections.

### **Chapter 5: Nuptiality, Mortality and Fertility (4)**

- Details referring to fertility and sources of nuptiality (the frequency or incidence of marriage within a population).
- Birth Rate – trend
- Mortality – Concepts and trends
- Fertility – concept and trend

### **Chapter 6: Migration and Urbanisation (4)**

- Concepts and numerous types of Migration.
- Urbanization and economic development.
- Density, Slums and Solutions

### **UNIT III: Chapter 7: Environment and Population Growth (7)**

- Concepts, relevance, definitions, measurement.
- The interrelationship between population growth, environment, and sustainable development.
- Environment Development Index.

- Implications of population growth on food supply, sanitation, housing, employment, health and education

#### Chapter 8: Population and Gender (4)

- Marginalisation of girls and women
- Women Empowerment: meaning, policies and progress
- Gender Development Index

#### Chapter 9: Population Policies and Programs (3)

- National Population policy 2000.
- Family Welfare Program in India.
- Policy of HRD

**Pedagogy:** Classroom lecture, tutorials, Problem solving exercise

| Pedagogy: Classroom lecture, tutorials, Problem-solving exercise            |          |    |
|-----------------------------------------------------------------------------|----------|----|
| Formative Assessment for C1 & C2                                            |          |    |
| Assessment Occasion/ type                                                   | Marks    |    |
|                                                                             | C1       | C2 |
| Internal Test                                                               | 10       | 10 |
| Assignment/Seminar                                                          | 05       |    |
| Quiz                                                                        | 05       |    |
| Case study / Field work / Project work/ Industrial Visit and Prepare report | -        | 10 |
| Total                                                                       | 40 Marks |    |
| Formative Assessment as per NEP guidelines are compulsory                   |          |    |

- ***Note: Strictly follow the Practicum***



## **References**

1. Rajendra K. Demography and Population Problems
2. Asha AB Principles of Population Studies
3. T R Malthus, An Essay on the Principle of Population
4. Hans Raj Population Studies
5. David Y. Demography the Study
6. Shashi Bushan Demography
7. M L Jhingan Demography

**CORPORATE ECONOMICS**  
**Open Elective Paper under NEP**

|                                          |                                      |
|------------------------------------------|--------------------------------------|
| <b>Program Name: BA in Economics</b>     | <b>Semester: Fourth Semester</b>     |
| <b>Course Title: Corporate Economics</b> |                                      |
| <b>Course Code: OE-4.7</b>               | <b>No. of Credits 3</b>              |
| <b>Contact hours 42 Hours</b>            | <b>Duration of SEA/Exam 2 hours</b>  |
| <b>Formative Assessment Marks 40</b>     | <b>Summative Assessment Marks 60</b> |

**Learning outcome:**

- To inculcate business attitude and develop skills among students to pursue higher education, world of work including self employment.
- To develop students with an understanding of the processes of business and its environment;
- To acquaint students with the dynamic nature and interdependent aspects of business;
- To develop an interest in the theory and practice of business, trade and industry;
- To familiarize students with theoretical foundations of the process of organizing and managing the operations of a business firm;

- To help students appreciate the economic and social significance of business activity and the social cost and benefits arising there from;
- To acquaint students with the practice of managing the operations and resources of business;
- To enable students to act more effectively and responsibly as consumers, employers, employees and citizens;

## **Unit 1 Evolution and Fundamentals of corporate economics**

**Chapter-1:** Introduction, meaning, Definitions, Nature, Scope, Objectives, Features and importance. 6hrs

**Chapter -2:** Industry-types: primary, secondary, tertiary Meaning and subgroups. Industrial development as a means of economic development. 5hrs

**Chapter-3:** Commerce-trade: (types-internal, external; wholesale and retail) and auxiliaries to trade; (banking, insurance, transportation, warehousing, communication, and advertising) 6hrs

Practicum: A Industrial Visit with a report

## **Unit 2 Public, Private and Global Enterprises**

**Chapter-4:** Public sector and private sector enterprises – features and concepts. 3hrs

**Chapter-5:** Forms of public sector enterprises: Departmental Undertakings, Statutory Corporations and Government Company. 3hrs

**Chapter-6:** Global Enterprises – Feature. Public private partnership – concept 3hrs

Practicum: Visit to a public enterprise and prepare report

## **Unit 3 Small Business and Enterprises**

**Chapter-7:** Entrepreneurship Development (ED): Concept, Characteristics and Need. Process of Entrepreneurship Development: Start-up India Scheme, ways to fund start-up. Intellectual Property Rights and Entrepreneurship 6hrs

**Chapter-8:** Role of small business in India. Problems of small scale enterprises. MSMEs 4hrs

**Chapter-9:** Government schemes and agencies for small scale industries: National Small Industries Corporation (NSIC) and District Industrial Centre (DIC) 6hrs  
 Practicum: Visit to beneficiary of governmental schemes and submit a report

**Pedagogy:** Classroom lecture, tutorials, Problem solving exercise

| Formative Assessment for C1 & C2                                             |          |    |
|------------------------------------------------------------------------------|----------|----|
| Assessment Occasion/ type                                                    | Marks    |    |
|                                                                              | C1       | C2 |
| Internal Test                                                                | 10       | 10 |
| Assignment/Seminar                                                           | 05       |    |
| Quiz                                                                         | 05       |    |
| Case study / Field work / Project work/ Industrial Visit and Preparea report | -        | 10 |
| Total                                                                        | 40 Marks |    |
| Formative Assessment as per NEP guidelines are compulsory                    |          |    |

***Note: Strictly follow the Practicum***

References:

1. Corporate Economics Kindle Edition by V.G. Kondalkar
2. The Corporate Economy Growth, Competition, and Innovative Potential By Robin Marris & Adrian Wood
3. Modern Economics- By H L Ahujha
4. Managerial Economics And Business Strategy By Michael R Baye & Jeffrey T Prince
5. Managerial Economics By D N Dwivedi
6. Economic Environment & Business By H L Ahujha
7. Indian Economy By Ramesh Singh
8. Corporate Economic Laws By C A Munish Bhandari
9. Industrial Economics By Barthwal

**Question Paper Pattern for UG Semester DSC & OEC**

**Paper Code:**

**Paper Title:**

**Duration of Exam 2 Hours**

**Max Marks 60 Marks**

**Instruction: Answer all the sections**

**Section-A**

**1. Answer ALL the following sub-questions, each sub-question carries ONE mark  
(10X1=10)**

- A.
- B.
- C.
- D.
- E.
- F.
- G.
- H.
- I.
- J.

**Section-B**

**Answer any FOUR of the following questions, each question carries FIVE marks  
(4X5=20)**

- 2.
- 3.
- 4.
- 5.
- 6.
- 7.

**Section-C**

**Answer any THREE of the following questions, each question carries TEN marks  
(3X10=30)**

- 8.
- 9.
- 10.
- 11.
- 12.

**Mangalore University**  
**Mangalagangothri -574 199**



**SYLLABUS**

**B.A./B.Sc. (Hons) Mathematics,**  
**B.A./B.Sc. with Mathematics as a Major/Minor Subject**  
**(ACCORDING TO NATIONAL EDUCATION POLICY 2020)**

**2021**



**Name of the Degree Program** : B.A./B.Sc.  
**Discipline Course** : Mathematics  
**Starting Year of Implementation** : 2021-22

**Programme Outcomes (PO):**

By the end of the program it is expected that the students will be benefited by the following:

|       |                                                                                                                                                                                                                                                                                                                                                             |
|-------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| PO 1  | <b>Disciplinary Knowledge:</b> Bachelor degree in Mathematics is the culmination of in-depth knowledge of Algebra, Calculus, Geometry, differential equations and several other branches of pure and applied mathematics. This also leads to study the related areas such as computer science and other allied subjects                                     |
| PO 2  | <b>Communication Skills:</b> Ability to communicate various mathematical concepts effectively using examples and their geometrical visualization. The skills and knowledge gained in this program will lead to the proficiency in analytical reasoning which can be used for modeling and solving of real life problems.                                    |
| PO 3  | <b>Critical thinking and analytical reasoning:</b> The students undergoing the programme acquire ability of critical thinking and logical reasoning and capability of recognizing and distinguishing the various aspects of real life problems.                                                                                                             |
| PO 4  | <b>Problem Solving:</b> The Mathematical knowledge gained by the students through the programme develop an ability to analyze the problems, identify and define appropriate computing requirements for its solutions. This programme enhances students overall development and also equip them with mathematical modelling ability, problem solving skills. |
| PO 5  | <b>Research related skills:</b> Student completing the program will develop the capability of inquiring about appropriate questions relating to the Mathematical concepts in different areas of Mathematics.                                                                                                                                                |
| PO 6  | <b>Information/digital Literacy:</b> The completion of the programme will enable the learner to use appropriate softwares to solve system of algebraic equation and differential equations.                                                                                                                                                                 |
| PO 7  | <b>Self – directed learning:</b> Student completing the program will develop an ability of working independently and to make an in-depth study of various notions of Mathematics.                                                                                                                                                                           |
| PO 8  | <b>Moral and ethical awareness/reasoning:</b> The student completing the program will develop an ability to identify unethical behavior such as fabrication, falsification or misinterpretation of data and adopting objectives, unbiased and truthful actions in all aspects of life, in general and Mathematical studies, in particular.                  |
| PO 9  | <b>Lifelong learning:</b> The programme provides self-directed learning and lifelong learning skills. The programme helps the learner to think independently and develop algorithms and computational skills for solving real word problems.                                                                                                                |
| PO 10 | Ability to peruse advanced studies and research in pure and applied Mathematical sciences.                                                                                                                                                                                                                                                                  |

## Assessment

### Weightage for the Assessments (in percentage)

| Type of Course                             | Formative Assessment/ I.A. | Summative Assessment (S.A.) |
|--------------------------------------------|----------------------------|-----------------------------|
| Theory                                     | 40%                        | 60 %                        |
| Practical                                  | 50%                        | 50 %                        |
| Projects                                   | 40%                        | 60 %                        |
| Experiential Learning<br>(Internship etc.) | --                         | --                          |



**Contents of Courses for B.A./B.Sc. with Mathematics as Major Subject &  
B.A./B.Sc. (Hons) Mathematics  
(Model IIA suggested by the Karnataka State Higher Education Council)**

| Semester                            | Course No. | Theory/<br>Practical | Credits | Paper Title                                                                                                        | Marks |      |
|-------------------------------------|------------|----------------------|---------|--------------------------------------------------------------------------------------------------------------------|-------|------|
|                                     |            |                      |         |                                                                                                                    | S.A.  | I.A. |
| I                                   | MATDSCT1.1 | Theory               | 4       | Number Theory-I, Algebra-I and Calculus-I                                                                          | 60    | 40   |
|                                     | MATDSCP1.1 | Practical            | 2       | Theory based Practicals on Number Theory-I, Algebra-I and Calculus-I                                               | 25    | 25   |
|                                     | MATOET1.1  | Theory               | 3       | (A) Mathematics - I<br>(B) Business Mathematics - I                                                                | 60    | 40   |
| II                                  | MATDSCT2.1 | Theory               | 4       | Number Theory-II, Algebra - II and Calculus - II                                                                   | 60    | 40   |
|                                     | MATDSCP2.1 | Practical            | 2       | Theory based Practicals on Number Theory-II, Algebra - II and Calculus - II                                        | 25    | 25   |
|                                     | MATOET2.1  | Theory               | 3       | (A) Mathematics - II<br>(B) Business Mathematics-II                                                                | 60    | 40   |
| <b>Exit Option with Certificate</b> |            |                      |         |                                                                                                                    |       |      |
| III                                 | MATDSCT3.1 | Theory               | 4       | Ordinary Differential Equations and Algebra - III                                                                  | 60    | 40   |
|                                     | MATDSCP3.1 | Practical            | 2       | Theory based Practicals on Ordinary Differential Equations and Algebra - III                                       | 25    | 25   |
|                                     | MATOET3.1  | Theory               | 3       | (A) Ordinary Differential Equations<br>(B) Mathematical Logic                                                      | 60    | 40   |
| IV                                  | MATDSCT4.1 | Theory               | 4       | Partial Differential Equations and Integral Transforms                                                             | 60    | 40   |
|                                     | MATDSCP4.1 | Practical            | 2       | Theory based Practicals on Partial Differential Equations and Integral Transforms                                  | 25    | 25   |
|                                     | MATOET4.1  | Theory               | 3       | (A) Partial Differential Equations<br>(B) Mathematical Finance                                                     | 60    | 40   |
| <b>Exit Option with Diploma</b>     |            |                      |         |                                                                                                                    |       |      |
| V                                   | MATDSCT5.1 | Theory               | 3       | Real and Complex Analysis                                                                                          | 60    | 40   |
|                                     | MATDSCP5.1 | Practical            | 2       | Theory based Practicals on Real and Complex Analysis                                                               | 25    | 25   |
|                                     | MATDSCT5.2 | Theory               | 3       | Modern Algebra - I                                                                                                 | 60    | 40   |
|                                     | MATDSCP5.2 | Practical            | 2       | Theory based Practicals Modern Algebra - I                                                                         | 25    | 25   |
|                                     | MATDSET5.1 | Theory               | 3       | Any ONE of the following electives:<br>a) Vector Calculus<br>b) Elementary Graph Theory<br>c) Discrete Mathematics | 60    | 40   |
| VI                                  | MATDSCT6.1 | Theory               | 3       | Linear Algebra - I                                                                                                 | 60    | 40   |
|                                     | MATDSCP6.1 | Practical            | 2       | Theory based Practicals on Linear Algebra - I                                                                      | 25    | 25   |
|                                     | MATDSCT6.2 | Theory               | 3       | Numerical Analysis                                                                                                 | 60    | 40   |

|                                                                                                                          |             |                  |                    |                                                                                                                                                                  |                       |                      |
|--------------------------------------------------------------------------------------------------------------------------|-------------|------------------|--------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------|----------------------|
|                                                                                                                          | MATDSCP6.2  | Practical        | 2                  | Theory based Practicals on Numerical Analysis                                                                                                                    | 25                    | 25                   |
|                                                                                                                          | MATDSET6.1  | Theory           | 3                  | Any ONE of the following electives:<br>a) Analytical Geometry in 3D<br>b) Linear Programming<br>c) Special Functions<br>d) Fourier Series and Fourier Transforms | 60                    | 40                   |
| <b>Exit Option with Bachelor of Arts (B.A.)/ Bachelor of Science(B.Sc.) Degree</b>                                       |             |                  |                    |                                                                                                                                                                  |                       |                      |
| VII                                                                                                                      | MATDSCT7.1  | Theory           | 3                  | Linear Algebra -II                                                                                                                                               | 60                    | 40                   |
|                                                                                                                          | MATDSCP7.1  | Practical        | 2                  | Theory based Practicals on Linear Algebra -II                                                                                                                    | 25                    | 25                   |
|                                                                                                                          | MATDSCT7.2  | Theory           | 3                  | Advanced Ordinary Differential Equations                                                                                                                         | 60                    | 40                   |
|                                                                                                                          | MATDSCP7.2  | Practical        | 2                  | Theory based Practicals on Advanced Ordinary Differential Equations                                                                                              | 25                    | 25                   |
|                                                                                                                          | MATDSCT7.3  | Theory           | 4                  | Advanced Real Analysis                                                                                                                                           | 60                    | 40                   |
|                                                                                                                          | MATDSET 7.1 | Theory           | 3                  | Any ONE of the following electives:<br>a) Graph Theory<br>b) Advanced Number Theory<br>c) Mathematical Statistics<br>d) Advanced Numerical Analysis              | 60                    | 40                   |
|                                                                                                                          | MATDSET 7.2 | Theory           | 3                  | Research Methodology in Mathematics                                                                                                                              | 60                    | 40                   |
| VIII                                                                                                                     | MATDSCT8.1  | Theory           | 4                  | Advanced Complex Analysis                                                                                                                                        | 60                    | 40                   |
|                                                                                                                          | MATDSCT8.2  | Theory           | 4                  | Abstract Algebra                                                                                                                                                 | 60                    | 40                   |
|                                                                                                                          | MATDSCT8.3  | Theory           | 3                  | General Topology                                                                                                                                                 | 60                    | 40                   |
|                                                                                                                          | MATDSET 8.1 | Theory           | 3                  | Any ONE of the following electives:<br>a) Operations Research<br>b) Lattice theory<br>c) Mathematical Modelling<br>d) Advanced Discrete Mathematics              | 60                    | 40                   |
|                                                                                                                          | MATDSET 8.2 | Research Project | 6<br>(3<br>+<br>3) | Research Project<br>OR<br>Any TWO of the following electives<br>a) Theory of Modules<br>b) Theory of Partitions<br>c) Cryptography<br>d) Finite Element Methods  | 120<br>OR<br>60<br>60 | 80<br>OR<br>40<br>40 |
| <b>Award of Bachelor of Arts Honours (B.A. Hons)/<br/>Bachelor of Science Honours (B.Sc. Hons) Degree in Mathematics</b> |             |                  |                    |                                                                                                                                                                  |                       |                      |

**Abbreviation for MATDSCTx.y/MATDSCPx.y/MATDSETx.y/MATOETx.y**

**MAT** – Mathematics;

**DSC** – Discipline Core; **DSE** – Discipline Elective; **OE** – Discipline Elective;

**T** – Theory, **P** – Practical;

**x.y** – <sup>x</sup>th Semester. Course y

**MATOETx.y(A)** - For students of Science stream who have not chosen Mathematics as one of Core subjects

**MATOETx.y(B)** - For Students of other than Science Stream



## CURRICULUM STRUCTURE FOR UNDERGRADUATE DEGREE PROGRAM

Name of the Degree Program : B.A. / B.Sc. (Honors)

Discipline/Subject : Mathematics

Starting Year of Implementation: 2021-22

### PROGRAM ARTICULATION MATRIX

| Semester | Course No. | Programme Outcomes that the Course Addresses | Pre-Requisite Course(s)  | Pedagogy*              | Assessment**                                                                                                               |
|----------|------------|----------------------------------------------|--------------------------|------------------------|----------------------------------------------------------------------------------------------------------------------------|
| I        | MATDSCT1.1 | PO 1, PO 2, PO 3                             | PU level Mathematics     | MOOC                   | CLASS TESTS<br><br>SEMINAR<br><br>QUIZ<br><br>ASSIGNMENT<br><br><br><br><br>TERM EXAM<br><br><br><br><br><br><br>VIVA-VOCE |
| II       | MATDSCT2.1 | PO 1, PO 2, PO 3, PO 8                       | MATDSCT1.1               | PROBLEM SOLVING        |                                                                                                                            |
| III      | MATDSCT3.1 | PO 1, PO 4, PO7, PO 8                        | MATDSCT2.1               | SEMINAR                |                                                                                                                            |
| IV       | MATDSCT4.1 | PO 1, PO 4, PO7, PO 8                        | MATDSCT3.1               | PROJECT BASED LEARNING |                                                                                                                            |
| V        | MATDSCT5.1 | PO 1, PO 2, PO 3, PO 5                       | ----                     | ASSIGNMENTS            |                                                                                                                            |
| V        | MATDSCT5.2 | PO 3, PO 4, PO 7, PO10                       | MATDSCT2.1<br>MATDSCT3.1 | GROUP DISCUSSION       |                                                                                                                            |
| VI       | MATDSCT6.1 | PO 6, PO 7, PO 10.                           | MATDSCT5.2               |                        |                                                                                                                            |
| VI       | MATDSCT6.2 | PO 5, PO 8, PO 9, PO 10.                     | MATDSCT5.1               |                        |                                                                                                                            |
| VII      | MATDSCT7.1 | PO 3, PO 4, PO5, PO 7, PO 9.                 | MATDSCT6.1               |                        |                                                                                                                            |
| VII      | MATDSCT7.2 | PO 2, PO 4, PO 5, PO 10                      | MATDSCT3.1               |                        |                                                                                                                            |
| VII      | MATDSCT7.3 | PO 2, PO 4, PO 5, PO 10                      | MATDSCT5.1               |                        |                                                                                                                            |
| VIII     | MATDSCT8.1 | PO 2, PO 4, PO 5, PO 10                      | MATDSCT5.1               |                        |                                                                                                                            |
| VIII     | MATDSCT8.2 | PO 2, PO 4, PO 5, PO 10                      | MATDSCT5.2               |                        |                                                                                                                            |
| VIII     | MATDSCT8.3 | PO 2, PO 4, PO 5, PO 10                      | MATDSCT5.1               |                        |                                                                                                                            |

\*Pedagogy for student engagement is predominantly Lecture. However, other pedagogies enhancing better student engagement to be recommended for each course. This list includes active learning/ course projects / Problem based or Project based Learning / Case Studies / Self Study like Seminar, Term Paper or MOOC.

\*\*Every Course needs to include assessment for higher order thinking skills (Applying/ Evaluating/ Creating). However, this column may contain alternate assessment methods that help formative assessment (i.e. assessment for Learning).

### B.A./B.Sc. with Mathematics as a Minor in the 3<sup>rd</sup> Year

| Semester | Course No.  | Theory/<br>Practical | Credits | Paper Title                                   | Marks |      |
|----------|-------------|----------------------|---------|-----------------------------------------------|-------|------|
|          |             |                      |         |                                               | S.A.  | I.A. |
| V        | MATDSCMT5.1 | Theory               | 3       | Complex Analysis                              | 60    | 40   |
|          | MATDSCMP5.1 | Practical            | 2       | Theory based Practicals on Complex Analysis   | 25    | 25   |
| VI       | MATDSCMT6.1 | Theory               | 3       | Numerical Analysis                            | 60    | 40   |
|          | MATDSCMP6.1 | Practical            | 2       | Theory based Practicals on Numerical Analysis | 25    | 25   |

#### Abbreviation for MATDSCMT5.1 / MATDSCMP5.1

MAT – Mathematics; DSC – Discipline Core; M – Minor; T – Theory /P – Practical;  
5 – Fifth Semester; .1 – Course 1

### Credit Distribution for B.A./B.Sc.(Honors) with Mathematics as Major in the 3<sup>rd</sup> Year (Model IIA suggested by the Karnataka State Higher Education Council)

| Subject              | Semester      | Major/<br>Minor<br>in the<br>3 <sup>rd</sup><br>Year | Credits                                                                                 |                          |                                                                                        |                                  |                                           | Total<br>Credits |
|----------------------|---------------|------------------------------------------------------|-----------------------------------------------------------------------------------------|--------------------------|----------------------------------------------------------------------------------------|----------------------------------|-------------------------------------------|------------------|
|                      |               |                                                      | Discipline<br>Specific<br>Core<br>(DSC)                                                 | Open<br>Elective<br>(OE) | Discipline<br>Specific<br>Elective<br>(DSE)                                            | AECC &<br>Languages              | Skill<br>Enhanceme<br>nt Courses<br>(SEC) |                  |
| Mathematics          | I - IV        | Major                                                | 4 Courses<br>(4+2)x 4=24                                                                | 4 Courses<br>3 x 4 = 12  | ---                                                                                    | (4+4=8)<br>Courses<br>8x(3+1)=32 | 2 Courses<br>2x(1+1)= 4                   | 72               |
| Other Subject        |               | Minor                                                | 24                                                                                      | --                       | --                                                                                     | --                               | --                                        | 24               |
| 96                   |               |                                                      |                                                                                         |                          |                                                                                        |                                  |                                           |                  |
| Mathematics          | V & VI        | Major                                                | 4 Courses<br>4x(3+2)=20                                                                 | -----                    | 2 Courses<br>2 x 3 = 06                                                                | ---                              | 2 Courses<br>2 x 2 = 4                    | 30               |
| Other Subject        |               | Minor                                                | 10                                                                                      | --                       | --                                                                                     | --                               | --                                        | 10               |
| (96+40)=136          |               |                                                      |                                                                                         |                          |                                                                                        |                                  |                                           |                  |
| Mathematics          | VII<br>& VIII | Major                                                | 2 Courses<br>2x(3+2)=10<br>3 Courses<br>3 x 4 = 12<br>1 Course<br>1 x 3 = 3<br>Total=25 | -----                    | 2 Courses<br>2 x 3 = 6<br>Res.Meth<br>1 x 3 = 3<br>2 Courses<br>2 x 3 = 6<br>Total= 15 | ----                             | -----                                     | 40               |
| Total No. of Courses |               |                                                      | 14                                                                                      | 04                       | 07                                                                                     | 08                               | 04                                        |                  |
| 136+40=176           |               |                                                      |                                                                                         |                          |                                                                                        |                                  |                                           |                  |



**Syllabus for B.A./B.Sc. with Mathematics as Major Subject &  
B.A./B.Sc. (Hons.) Mathematics**

**SEMESTER – I**

| <b>MATDSCT1.1: Number Theory-I, Algebra-I and Calculus-I</b> |                                                   |
|--------------------------------------------------------------|---------------------------------------------------|
| <b>Teaching Hours : 4 Hours/Week</b>                         | <b>Credits: 4</b>                                 |
| <b>Total Teaching Hours: 56 Hours</b>                        | <b>Max. Marks: 100<br/>(S.A.- 60 + I.A. – 40)</b> |

**Course Learning Outcomes:** This course will enable the students to

- Understand the elementary concepts of Number Theory.
- Solve the system of homogeneous and non-homogeneous  $m$  linear equations in  $n$  variables.
- Sketch curves in Cartesian and polar co-ordinates.
- Identify and apply intermediate value theorem, mean value theorems and L'Hospital rule.

**Unit-I: Number Theory:** Division Algorithm, The Greatest Common Divisor (g.c.d), Euclidean Algorithm, Diophantine Equations, Fundamental Theorem of Arithmetic. The Theory of Congruences, Basic Properties of Congruences, Binary and Decimal Representation of Integers. Linear Congruences and The Chinese Remainder Theorem.

**14 Hours**

**Unit-II: Matrices:** Recapitulation of Symmetric and Skew Symmetric matrices, Cayley-Hamilton theorem, inverse of matrices by Cayley-Hamilton theorem (Without Proof). Algebra of Matrices, Row and column reduction to Echelon form. Rank of a matrix, Inverse of a matrix by elementary operations, Solution of system of linear equations, Criteria for existence of non-trivial solutions of homogeneous system of linear equations. Solution of non-homogeneous system of linear equations.

**14 Hours**

**Unit-III: Polar Co-ordinates:** Polar coordinates, angle between the radius vector and tangent. Angle of intersection of two curves (polar forms), length of perpendicular from pole to the tangent, pedal equations. Derivative of an arc in Cartesian, parametric and polar forms, curvature of plane curve-radius of curvature formula in Cartesian, parametric and polar and pedal forms- center of curvature, asymptotes, Tracing of curves (standard curves).

**14 Hours**

**Unit-IV: Differential Calculus:** Intermediate value theorem, Rolle's Theorem, Lagrange's Mean Value theorem, Cauchy's Mean value theorem and examples. Taylor's theorem, Maclaurin's series, Indeterminate forms and evaluation of limits using L' Hospital rule. Leibnitz theorem and its applications.

**14 Hours**

**Reference Books:**

- [1] David M. Burton., Elementary Number Theory, 7th Ed., McGraw Hill, 2011.
- [2] Gareth A. Jones and J. Marry Jones, Elementary Number Theory, Springer, 1998.
- [3] N. S Gopalakrishnan, University Algebra, 3rd Ed., New Age International Publications, 2015.
- [4] B. S. Vatssa, Theory of Matrices, New Age International Publishers, New Delhi, 2005.

- [5] A. R. Vasishtha and A. K. Vasishtha, Matrices, Krishna Prakashana Media (P) Ltd., 2008.
- [6] Shanti Narayan and P.K. Mittal, Text book of Matrices, 5<sup>th</sup> Ed., S Chand and Co. Pvt. Ltd., New Delhi, 2013.
- [7] Shanthi Narayan and P.K. Mittal, Differential Calculus, Reprint. S Chand and Co. Pvt. Ltd., New Delhi, 2014.
- [8] Debasish Sengupta, Applications of Calculus, Books and Allied (P) Ltd., 2019.
- [9] George B. Thomas and Ross L. Finney, Calculus and Analytic Geometry, Addison-Wesley, 1992.
- [10] Louis Leithold, Calculus with Analytic Geometry, 5th Ed., Harper and Row International, 1986.
- [11] Maurice D. Weir, George B. Thomas, Jr., Joel Hass and Frank R. Giordano, Thomas' Calculus, 11th Ed., Pearson, 2008.
- [12] S. Narayanan and T. K. Manicavachogam Pillay, Calculus, Vol. I & II, S. Viswanathan Pvt. Ltd., 1996.

| <b>MATDSCP1.1: Practicals on Number Theory-I, Algebra-I and Calculus-I</b> |                                                 |
|----------------------------------------------------------------------------|-------------------------------------------------|
| <b>Practical Hours : 4 Hours/Week</b>                                      | <b>Credits: 2</b>                               |
| <b>Total Practical Hours: 56 Hours</b>                                     | <b>Max. Marks: 50<br/>(S.A.-25 + I.A. – 25)</b> |

**Course Learning Outcomes:** This course will enable the students to

- Learn *Free and Open Source Software (FOSS)* tools for computer programming.
- Solve problems on Number theory, Algebra and Calculus studied in **MATDSCT 1.1** by using FOSS softwares.
- Acquire knowledge of applications of algebra and calculus through FOSS.

**Practical/Lab Work to be performed in Computer Lab (FOSS)**

**Suggested Softwares:** Maxima/Scilab/Python.

1. Introduction to the software and commands related to the topic.
2. Program for Euclidean Algorithm.
3. Program for Divisibility tests.
4. Programs for Binary and Decimal Representation of Integers.
5. Program to solve Simultaneous Congruences involving Chinese Remainder Theorem.
6. Computation of addition and subtraction of matrices.
7. Computation of Multiplication of matrices.
8. Computation of Trace and Transpose of Matrix.
9. Computation of Rank and Row reduced Echelon form of a matrix.
10. Computation of Inverse of an invertible Matrix using Cayley-Hamilton theorem.
11. Solving systems of homogeneous and non-homogeneous linear algebraic equations.
12. Tracing of standard curves (Cartesian form).
13. Tracing of standard curves (Polar form).
14. Taylor's and Maclaurin's expansions of the given functions.



## Open Elective Course

(For students of Science stream who have not chosen Mathematics as one of Core subjects)

| MATOET1.1 (A): Mathematics - I |                                           |
|--------------------------------|-------------------------------------------|
| Teaching Hours : 3 Hours/Week  | Credits: 3                                |
| Total Teaching Hours: 42 Hours | Max. Marks: 100<br>(S.A.- 60 + I.A. – 40) |

**Course Learning Outcomes:** This course will enable the students to

- Understand the elementary concepts of Number Theory.
- Solve the system of homogeneous and non-homogeneous  $m$  linear equations in  $n$  variables.
- Identify and apply intermediate value theorem, mean value theorems and L'Hospital rule.

**Unit-I: Number Theory:** Division Algorithm, The Greatest Common Divisor (g.c.d), Euclidean Algorithm, Diophantine Equations, Fundamental Theorem of Arithmetic. Theory of Congruences, Basic Properties of Congruences, Binary and Decimal Representation of Integers. Linear Congruences and The Chinese Remainder Theorem. **14 Hours**

**Unit-II: Matrices:** Recapitulation of Symmetric and Skew Symmetric matrices, Cayley-Hamilton theorem, inverse of matrices by Cayley-Hamilton theorem (Without Proof). Algebra of Matrices, Row and column reduction to Echelon form. Rank of a matrix, Inverse of a matrix by elementary operations, Solution of system of linear equations, Criteria for existence of non-trivial solutions of homogeneous system of linear equations. Solution of non-homogeneous system of linear equations. **14 Hours**

**Unit-III: Differential Calculus:** Intermediate value theorem, Rolle's Theorem, Lagrange's Mean Value theorem, Cauchy's Mean value theorem and examples. Taylor's theorem, Maclaurin's series, Indeterminate forms and evaluation of limits using L' Hospital rule. Leibnitz theorem and its applications. **14 Hours**

### Reference Books:

- [1] David M. Burton., Elementary Number Theory, 7th Ed., McGraw Hill, 2011.
- [2] Gareth A. Jones and J. Marry Jones, Elementary Number Theory, Springer, 1998.
- [3] N. S Gopalakrishnan, University Algebra, 3rd Ed., New Age International Publications, 2015.
- [4] B. S. Vatssa, Theory of Matrices, New Age International Publishers, New Delhi, 2005.
- [5] A. R. Vasishtha and A. K. Vasishtha, Matrices, Krishna Prakashana Media (P) Ltd., 2008.
- [6] Shanti Narayan and P.K. Mittal, Text book of Matrices, 5<sup>th</sup> Ed., S Chand and Co. Pvt. Ltd., New Delhi, 2013.
- [7] Shanthi Narayan and P.K. Mittal, Differential Calculus, Reprint. S Chand and Co. Pvt. Ltd., New Delhi, 2014.
- [8] Debasish Sengupta, Applications of Calculus, Books and Allied (P) Ltd., 2019.
- [9] George B. Thomas and Ross L. Finney, Calculus and Analytic Geometry, Addison-Wesley, 1992.

[10] Maurice D. Weir, George B. Thomas, Jr., Joel Hass and Frank R. Giordano, Thomas' Calculus, 11th Ed., Pearson, 2008.

[11] S. Narayanan and T. K. Manicavachogam Pillay, Calculus, Vol. I & II, S. Viswanathan Pvt. Ltd., 1996.

### Open Elective

(For Students of other than Science Stream)

| <b>MATOET1.1 (B): Business Mathematics-I</b> |                                                         |
|----------------------------------------------|---------------------------------------------------------|
| <b>Teaching Hours : 3 Hours/Week</b>         | <b>Credits: 3</b>                                       |
| <b>Total Teaching Hours: 42 Hours</b>        | <b>Max. Marks: 100</b><br><b>(S.A.- 60 + I.A. – 40)</b> |

**Course Learning Outcomes:** This course will enable the students to

- Solve the system of homogeneous and non-homogeneous  $m$  linear equations in  $n$  variables.
- Translate the real world problems through appropriate mathematical modeling.
- Explain the concepts and use equations, formulae and mathematical expressions in a variety of context.
- Find the extreme values of functions.
- Analyze and demonstrate the mathematical skill required in mathematically intensive areas such as economics, business etc.

**Unit-I: Matrices:** Definition of a matrix, types of matrices, algebra of matrices. Properties of determinants; calculations of values of determinants up to third order, Adjoint of a matrix, elementary row and column operations, solution of a system of linear equations having unique solution and involving not more than three variables. Examples on commercial mathematics.

**14 Hours**

**Unit-II: Straight line and Conics:** Straight line in economics, Break-Even point, System of straight lines, Effect of a Tax or Subsidy. Parabola in economics, The non-linear model. Rectangular hyperbola: Rectangular hyperbola in economics. Circle in economics. Inequalities and absolute values: Properties of inequalities, Linear inequality in one variable, Absolute values. Applications in economics.

**14 Hours**

**Unit-III: Derivatives of functions:** Economic applications, Demand function, Price demand, income demand, Cross demand, Law of supply, Revenue functions, Short-run production function, Short-run cost function, Relation between marginal product and marginal cost. The maxima and minima of functions: Applications of maxima and minima of functions in economics and business.

**14 Hours**

#### Reference Books:

- [1] B. S. Vatsa, Theory of Matrices, New Age International Publishers, New Delhi, 2005.
- [2] A. R. Vasishtha and A. K. Vasishtha, Matrices, Krishna Prakashana Media (P) Ltd., 2008.
- [3] Shanti Narayan and P.K. Mittal, Text book of Matrices, 5<sup>th</sup> Ed., S. Chand and Co. Pvt. Ltd., New Delhi, 2013.



- [4] E.T. Dowling, Mathematics for Economics, Schaum's Outline, 3<sup>rd</sup> Ed., McGraw Hill, London, 2011.
- [5] R.G.D. Allen, Basic Mathematics, Macmillan, UK, 1968.
- [6] N.D. Vohra, Quantitative Techniques in Management, Tata McGraw Hill, New Delhi, 2007.
- [7] R. S. Soni, Business Mathematics with Applications in Business and Economics, Pitambar Publishing, India 1996.
- [8] Maurice D. Weir, George B. Thomas, Jr., Joel Hass and Frank R. Giordano, Thomas' Calculus, 11th Ed., Pearson, 2008.

## SEMESTER – II

| MATDSCT 2.1: Number Theory-II, Algebra-II and Calculus-II |                                           |
|-----------------------------------------------------------|-------------------------------------------|
| Teaching Hours : 4 Hours/Week                             | Credits: 4                                |
| Total Teaching Hours: 56 Hours                            | Max. Marks: 100<br>(S.A.- 60 + I.A. – 40) |

**Course Learning Outcomes:** This course will enable the students to

- Understand the Euler's  $\phi$ -function and finite continued fractions.
- Recognize the mathematical objects called Groups.
- Identify cyclic and non-cyclic groups
- Link the fundamental concepts of groups and symmetries of geometrical objects.
- Understand the concept of partial derivatives of functions of several variables.
- Find the Taylor's and Maclaurin's series of functions of two variables.
- Find the extreme values of functions of two variables.
- Understand the concepts of line integrals, multiple integrals and their applications.

**Unit-I: Number Theory:** Fermat's Theorem, Wilson's Theorem, Quadratic Congruence. Euler's  $\phi$ -function, definition and properties, Euler's theorem and corollaries, finite continued fractions. **14 hours**

**Unit-II: Groups:** Binary Operations, Associativity, Commutativity, Examples for Binary Operations, Definition of a Group, Examples, Right inverse, Left inverse, Some properties, Abelian and Non-abelian groups, Laws of exponents, Subgroups, Intersection of subgroups, Centralizer of an element, Normalizer of a subgroup, Product of subgroups, Order of products of subgroups, Cyclic groups, Properties, Number of generators. **14 hours**

**Unit-III: Partial Derivatives:** Functions of two or more variables-explicit and implicit functions, partial derivatives. Homogeneous functions- Euler's theorem, total derivatives, differentiation of implicit and composite functions, Jacobians and standard properties and illustrative examples. Taylor's and Maclaurin's series for functions of two variables, Maxima-Minima of functions of two variables. **14 hours**

**Unit-IV: Integral Calculus:** Recapitulation of definite integrals and its properties. *Line integral:* Definition of line integral and basic properties, examples on evaluation of line

integrals. *Double integral*: Definition of Double integrals and its conversion to iterated integrals. Evaluation of double integrals by changing the order of integration and change of variables. Computation of plane surface areas, volume underneath a surface of revolution using double integral. *Triple integral*: Definition of triple integrals and evaluation-change of variables, volume as triple integral. Differentiation under the integral sign by Leibnitz rule.

**14 hours**

**Reference Books:**

- [1] David M. Burton., Elementary Number Theory, 7th Ed., McGraw Hill, 2011.
- [2] Gareth A. Jones and J. Marry Jones, Elementary Number Theory, Springer, 1998.
- [3] N. S Gopalakrishnan, University Algebra, 3rd Ed., New Age International Publications, 2015.
- [4] I. N. Herstein, Topics in Algebra, 2nd Ed., Wiley Publishers, 1975.
- [5] A. R. Vasishtha and A. K. Vasishtha, Modern Algebra, Krishna Prakashan Mandir, Meerut, U.P., 2008.
- [6] Bernald and Child, Higher Algebra, Arihant Publication India Limited, India, 2016.
- [7] Vijay K Khanna and S K Bhambri, A Course in Abstract Algebra, 5th Ed., Vikas Publishing House, India, 2016.
- [8] Shanthi Narayan and P. K. Mittal, Differential Calculus, Reprint, S. Chand and Co. Pvt. Ltd., New Delhi, 2014.
- [9] Shanti Narayan and P. K. Mittal, Integral Calculus. S. Chand Ltd., India, 2005.
- [10] George B. Thomas and Ross L. Finney, Calculus and Analytic Geometry, Addison-Wesley, 1992.
- [11] Maurice D. Weir, George B. Thomas, Jr., Joel Hass and Frank R. Giordano, Thomas' Calculus, 11th Ed., Pearson, 2008.
- [12] S. Arora and S. C. Malik, Mathematical analysis, Wiley, India, 1992.

| <b>MATDSCP2.1: Practicals on Number Theory-II, Algebra-II and Calculus-II</b> |                                                       |
|-------------------------------------------------------------------------------|-------------------------------------------------------|
| <b>Practical Hours : 4 Hours/Week</b>                                         | <b>Credits: 2</b>                                     |
| <b>Total Practical Hours: 56 Hours</b>                                        | <b>Max. Marks: 50</b><br><b>(S.A.-25 + I.A. – 25)</b> |

**Course Learning Outcomes:** This course will enable the students to

- Learn *Free and Open Source Software (FOSS)* tools for computer programming.
- Solve problems on Number Theory, Algebra and Calculus by using FOSS softwares.
- Acquire knowledge of applications of algebra and calculus through FOSS.

**Practical/Lab Work to be performed in Computer Lab**

**Suggested Softwares:** Maxima/Scilab/Python.

1. Program to compute Euler's  $\phi$ -function values for positive integers.
2. Program to write rational numbers as finite continued fractions.
3. Program to find the rational numbers corresponding to given finite continued fractions.
4. Program for verification of binary operations.
5. Programs: (i) To find identity element of a group. (ii) To find inverse of an element in a group.



6. Program to construct Cayley's table and test abelian for given finite set.
7. Program to find generators and corresponding possible subgroups of a cyclic group.
8. Finding all possible subgroups of a finite group.
9. Obtaining partial derivative of some standard functions.
10. Solutions of optimization problems.
11. Programs to develop Maclaurin's expansion for functions of two variables.
12. Program to evaluate the line integrals.
13. Program to evaluate the Double integrals with constant and variable limits.
14. Program to evaluate the Triple integrals with constant and variable limits.

### **Open Elective**

*(For students of Science stream who have not chosen Mathematics as one of the Core subjects)*

| <b>MATOET2.1(A): Mathematics – II</b> |                                                         |
|---------------------------------------|---------------------------------------------------------|
| <b>Teaching Hours : 3 Hours/Week</b>  | <b>Credits: 3</b>                                       |
| <b>Total Teaching Hours: 42 Hours</b> | <b>Max. Marks: 100</b><br><b>(S.A.- 60 + I.A. – 40)</b> |

**Course Learning Outcomes:** This course will enable the students to

- Recognize the mathematical objects called Groups.
- Identify cyclic and non-cyclic groups
- Link the fundamental concepts of groups and symmetries of geometrical objects.
- Find the extreme values of functions of two variables.
- Understand the concepts of line integrals, multiple integrals and their applications.

**Unit-I: Groups:** Binary Operations, Associativity, Commutativity, Examples for Binary Operations, Definition of a Group, Examples, Right inverse, Left inverse, Some properties, Abelian and Non-abelian groups, Laws of exponents, Subgroups, Intersection of subgroups, Centralizer of an element, Normalizer of a subgroup, Product of subgroups, Order of products of subgroups, Cyclic groups, Properties, Number of generators. **14 hours**

**Unit-II: Partial Derivatives:** Functions of two or more variables-explicit and implicit functions, partial derivatives. Homogeneous functions- Euler's theorem, total derivatives, differentiation of implicit and composite functions, Jacobians and standard properties and illustrative examples. Taylor's and Maclaurin's series for functions of two variables, Maxima-Minima of functions of two variables. **14 hours**

**Unit-III: Integral Calculus:** Recapitulation of definite integrals and its properties. *Line integral:* Definition of line integral and basic properties, examples on evaluation of line integrals. *Double integral:* Definition of Double integrals and its conversion to iterated integrals. Evaluation of double integrals by changing the order of integration and change of variables. Computation of plane surface areas, volume underneath a surface of revolution using double integral. *Triple integral:* Definition of triple integrals and evaluation-change of variables, volume as triple integral. Differentiation under the integral sign by Leibnitz rule. **14 hours**

**Reference Books:**

- [1] N. S. Gopalakrishnan, University Algebra, 3rd Ed., New Age International Publications, 2015.
- [2] I. N. Herstein, Topics in Algebra, 2nd Ed., Wiley Publishers, 1975.
- [3] A. R. Vasishtha and A. K. Vasishtha, Modern Algebra, Krishna Prakashan Mandir, Meerut, U.P., 2008.
- [4] Bernald and Child, Higher Algebra, Arihant Publication India Limited, India, 2016.
- [5] Vijay K Khanna and S K Bhambri, A Course in Abstract Algebra, 5th Ed., Vikas Publishing House, India, 2016.
- [6] Shanthi Narayan and P. K. Mittal, Differential Calculus, Reprint, S Chand and Co. Pvt. Ltd., New Delhi, 2014.
- [7] Shanti Narayan and P. K. Mittal, Integral Calculus. S. Chand Ltd., India, 2005.
- [8] George B. Thomas and Ross L. Finney, Calculus and Analytic Geometry, Addison-Wesley, 1992.
- [9] Maurice D. Weir, George B. Thomas, Jr., Joel Hass and Frank R. Giordano, Thomas' Calculus, 11th Ed., Pearson, 2008.
- [10] S. Arora and S .C. Malik, Mathematical analysis, Wiley, India, 1992.

**Open Elective**

*(For Students of other than science stream)*

| <b>MATOET2.1(B): Business Mathematics-II</b> |                                                         |
|----------------------------------------------|---------------------------------------------------------|
| <b>Teaching Hours : 3 Hours/Week</b>         | <b>Credits: 3</b>                                       |
| <b>Total Teaching Hours: 42 Hours</b>        | <b>Max. Marks: 100</b><br><b>(S.A.- 60 + I.A. – 40)</b> |

**Course Learning Outcomes:** This course will enable the students to

- Integrate concepts in international business with functioning global trade.
- Evaluate the legal, social and economic environment of business.
- To learn different techniques of simplification of real number system
- To enable student to answer competitive examinations
- Will be able to apply knowledge of business concepts and functions in an integrated manner.

**Unit-I: Commercial Arithmetic:** Interest: Concept of Present value and Future value, Simple interest, Compound interest, Nominal and Effective rate of interest, Examples and Problems Annuity: Ordinary Annuity, Sinking Fund, Annuity due, Present Value and Future Value of Annuity, Equated Monthly Instalments (EMI) by Interest of Reducing Balance and Flat Interest methods, Examples and Problems. **14 Hours**

**Unit II:** Techniques of solving problems involving number system and decimal fraction to calculate share of profit ,simplification of equations involving cost and expenditure, Average, Profit and loss. **14 Hours**



**Unit III: Percentage, Ratio and proportion, Partnership, Time and work, Situations in Boats and Streams, Simple problems on trains and other moving objects, different types of problems in Calendar, number of days and dates to calculate period of payments, Stocks and shares and Problems related clock.**

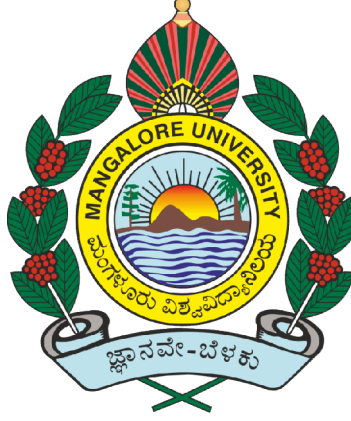
**14 Hours**

**Reference Books:**

- [1] R. S. Agarwal, Quantitative Aptitude, S. Chand & company Pvt. Ltd., 2014.
- [2] S. A. Bari, Practical Business Mathematics, New Literature Publishing Company, Bombay, 1971.
- [3] K. Selvakumar, Mathematics for Commerce, Notion Press, Chennai, 2014.
- [4] Dinesh Khattar and S. R. Arora, Business Mathematics with Applications, S. Chand Publishing, New Delhi, 2001.
- [5] M. K. Bhowal, Fundamentals of Business Mathematics, Asian Books Pvt. Ltd., New Delhi, 2009
- [6] Martin Anthony and Norman Biggs, Mathematics for Economics and Finance: Methods and Modelling, Cambridge University Press, Cambridge, 1996.
- [7] Ahmad Nazri and Wahidudin, Financial Mathematics and its Applications, Ventus Publishing, APS, Denmark, 2011.

# Mangalore University

Mangalagangothri -574 199



## SYLLABUS (Semester III and IV)

B.A./B.Sc. (Hons) Mathematics,  
B.A./B.Sc. with Mathematics as a Major/Minor Subject  
(ACCORDING TO NATIONAL EDUCATION POLICY 2020)

2022

**Syllabus for B.A./B.Sc. with Mathematics as Major Subject**  
**&**  
**B.A./B.Sc. (Hons) Mathematics**  
**SEMESTER – III**  
**(2022-23 onwards)**

| <b>MATDSCT 3.1: Ordinary Differential Equations and Real Analysis – I</b> |                                                        |
|---------------------------------------------------------------------------|--------------------------------------------------------|
| <b>Teaching Hours: 4 Hours/Week</b>                                       | <b>Credits: 4</b>                                      |
| <b>Total Teaching Hours: 56 Hours</b>                                     | <b>Max. Marks: 100</b><br><b>(SEE- 60 + I.A. - 40)</b> |

**Course Learning Outcomes:** This course will enable the students to:

- Solve first-order non-linear differential equations and linear differential equations.
- To model problems in nature using Ordinary Differential Equations.
- Formulate differential equations for various mathematical models
- Apply these techniques to solve and analyze various mathematical models.
- Understand the fundamental properties of the real numbers that lead to define sequence and series, the formal development of real analysis.
- Learn the concept of Convergence and Divergence of a sequence.
- Able to handle and understand limits and their use in sequences, series, differentiation, and integration.
- Apply the ratio, root, alternating series, and limit comparison tests for convergence and absolute convergence of an infinite series.

**Ordinary Differential Equations:**

**Unit I:** Recapitulation of Differential Equations of first order and first degree, Exact Differential equations, Necessary and sufficient condition for the equations to be exact, Reducible to the exact differential equations. Differential equations of the first order and higher degree: Equations solvable for  $p$ ,  $x$ ,  $y$ . Clairaut's equation and singular solution. Orthogonal trajectories of Cartesian and polar curves. **14hrs**

**Unit II:** Linear differential equations of the  $n^{\text{th}}$  order with constant coefficients. Particular Integrals when the RHS is of the form  $e^{ax}$ ,  $\sin(ax+b)$ ,  $\cos(ax+b)$ ,  $x^n$ ,  $e^{ax} V$  and  $xV$  (with proofs), where  $V$  is a function of  $x$ . Cauchy – Euler equations, Legendre differential equations, Method of variation of parameters. Simultaneous differential equations with two and more than two variables. Condition for integrability of total differential equations  $P dx + Q dy + R dz = 0$ . **14 hrs**

**Unit III: Sequences:** Recapitulation of number system - Real line, bounded sets, supremum and infimum of a set, Archimedean property of  $R$ . Intervals, neighborhood of a point, open sets, closed sets, limit points.

Sequences of real numbers, Bounded sequences. Limit of a sequence. convergent, divergent, and oscillatory sequences. Monotonic sequences. Algebra of convergent sequences. Limit points of a sequence. Bolzano Weierstrass theorem for sequence. Limit superior and limit inferior of sequences. Cauchy's first and second theorem on limits of a sequence. Cauchy's general principle for convergence of a sequence. Subsequence and their properties. **14hrs**

**Unit IV: Infinite Series:** Definition of convergent, divergent and oscillatory series. Series of non-negative terms, Cauchy's general principle of convergence. Geometric series, P-series (Harmonic series). Comparison tests for positive term series. D'Alembert's ratio test, Raabe's test. Cauchy's Root test and Cauchy's integral test. Alternating series. Leibnitz's theorem. Absolute convergence and conditional convergence of a series. Summation of series: Binomial, exponential and logarithmic. **14 hrs**

### Reference Books:

1. M. D. Raisinghania, *Ordinary Differential Equations & Partial Differential Equations*, S. Chand & Company, New Delhi, 20<sup>th</sup> Edition- 2020. (For Unit I and Unit II)
2. S. C. Malik, and Savitha Arora, *Mathematical Analysis*, New Age International Publishers, 5<sup>th</sup> Edition- 2017. (For Unit III and Unit IV)
3. J. Sinha Roy and S. P. Adhy: *A Course of Ordinary and Partial Differential Equation*, Kalyani Publishers, New Delhi, 4<sup>th</sup> Edition - 2014.
4. D. Murray, *Introductory Course in Differential Equations*, Orient Black Swan - 2016
5. W. T. Reid, *Ordinary Differential Equations*, John Wiley, New York - 1971.
6. S. L. Ross, *Differential Equations*, John Wiley and Sons, 3<sup>rd</sup> Edition - 1984.
7. R. G. Bartle and D. R. Sherbert, *Introduction to Real Analysis*, John Wiley and Sons (Asia) Pvt. Ltd., Singapore, 3<sup>rd</sup> Edition - 2015.
8. K. A. Ross, *Elementary Analysis: The Theory of Calculus*, Springer, 2<sup>nd</sup> Edition - 2013
9. S. K. Berberian, *A First Course in Real Analysis*, Springer Verlag, New York - 1994.
10. T. Apostol, *Mathematical Analysis*, Narosa Publishing House, 2<sup>nd</sup> Edition - 2002.
11. E. D. Rainville and P. E. Bedient, *Elementary Differential Equations*, Pearson, 8<sup>th</sup> Edition - 1996.

## PRACTICAL

| <b>MATDSCP 3.1: Practical on Ordinary Differential Equations and Real Analysis – I</b> |                                                        |
|----------------------------------------------------------------------------------------|--------------------------------------------------------|
| <b>Teaching Hours: 4 Hours/Week</b>                                                    | <b>Credits: 2</b>                                      |
| <b>Total Teaching Hours: 56 Hours</b>                                                  | <b>Max. Marks: 50</b><br><b>(SEE - 25 + I.A. – 25)</b> |

**Course Learning Outcomes:** This course will enable the students to gain hands-on experience of

- Free and Open Source software (FOSS) tools or computer programming.
- Solving exact differential equations
- Plotting orthogonal trajectories
- Finding complementary function and particular integral of linear and homogeneous differential equations.
- Acquire knowledge of applications of real analysis and differential equations.
- Verification of convergence/divergence of different types of series

### Practical/Lab Work to be performed in Computer Lab

Use open-source software to execute the practical problems. (Maxima/Scilab/MatLab/Mathematica/Python)

1. Fundamentals of Ordinary differential equations and Real analysis using FOSS



2. Verification of exactness of a differential equation
3. Plot orthogonal trajectories for Cartesian and polar curves
4. Solutions of differential equations that are solvable for  $x$ ,  $y$ ,  $p$ .
5. To find the singular solution by using Clairaut's form.
6. Finding the Complementary Function and Particular Integral of linear and homogeneous differential equations with constant coefficients and plot the solutions.
7. Finding the Particular Integral of differential equations up to second order and plot the solutions.
8. Solutions to the Total and Simultaneous differential equations and plot the solutions.
9. Test the convergence of sequences
10. Verification of exponential, logarithm and binomial series.
11. Verification of geometric series,  $p$ -series, Cauchy's Integral test, root test, and D Alembert's Test
12. Examples on a series of positive terms.
13. Examples on alternating series using Leibnitz's theorem.
14. Finding the convergence of series using Cauchy's criterion for partial sums.

### Open Elective Course

(For students of Science stream who have not chosen Mathematics as one of the Core Course)

| MATOET3.1(A) Ordinary Differential Equations |                                           |
|----------------------------------------------|-------------------------------------------|
| Teaching Hours: 3 Hours/Week                 | Credits: 3                                |
| Total Teaching Hours: 42 Hours               | Max. Marks: 100<br>(SEE - 60 + I.A. - 40) |

**Course Learning Outcomes:** This course will enable the students to:

- Understand the concept of the differential equation and their classification
- Know the meaning of the solution of a differential equation.
- To solve first-order ordinary differential equations.
- To solve exact differential equations and Converts to separable and homogenous equations to exact differential equations by integrating factors.
- To Solve Bernoulli differential equations.
- To find the solution to higher-order linear differential equations.

**Unit I:** Recapitulation of Differential Equations of first order and first degree, Exact Differential equations, Necessary and sufficient condition for the equations to be exact, Reducible to the exact differential equations. **14hrs**

**Unit II:** Differential equations of the first order and higher degree: Equations solvable for  $p$ ,  $x$ ,  $y$ . Clairaut's equation and singular solution. Orthogonal trajectories of Cartesian and polar curves. **14hrs**

**Unit III:** Linear differential equations of the  $n^{\text{th}}$  order with constant coefficients. Particular Integrals when the RHS is of the form  $e^{ax}$ ,  $\sin(ax+b)$ ,  $\cos(ax+b)$ ,  $x^n$ ,  $e^{ax}V$  where  $V$  is a function of  $x$ . **14 hrs**

**Reference Books:**

1. M. D. Raisinghania, *Ordinary Differential Equations & Partial Differential Equations*, S. Chand & Company, New Delhi, 20<sup>th</sup> Edition – 2020. (For Unit I and Unit II)
2. J. Sinha Roy and S Padhy : *A course of Ordinary and Partial Differential Equation*, Kalyani Publishers, New Delhi, 4<sup>th</sup> Edition - 2014.
3. D. Murray, *Introductory Course in Differential Equations*, Orient BlackSwan–2016.
4. W. T. Reid, *Ordinary Differential Equations*, John Wiley, New York - 1971.
5. S. L. Ross, *Differential Equations*, John Wiley and Sons, 3<sup>rd</sup> Edition -1984.

**Open Elective Course***(For students of other than Science stream )*

| <b>MATOET 3.1(B): Quantitative Mathematics</b> |                                                  |
|------------------------------------------------|--------------------------------------------------|
| <b>Teaching Hours : 3 Hours/Week</b>           | <b>Credits: 3</b>                                |
| <b>Total Teaching Hours: 42 Hours</b>          | <b>Max. Marks: 100<br/>(SEE - 60 + IA - 40 )</b> |

**Course Outcomes:** This course will enable the students to:

- Understand number system and fundamental operations
- Understand the concept of linear quadratic and simultaneous equations and their applications in real life problems
- Understand and solve the problems based on Age.
- Solve Speed and Distance related problems.

**Unit-I: Algebra**

Set theory and simple applications of Venn Diagram, relations, functions, indices, logarithms, permutations and combinations. Examples on commercial mathematics.

14 Hrs

**Unit-II: Number System**

Numbers, Operations on Numbers, Tests on Divisibility, HCF and LCM of numbers. Decimal Fractions, Simplification, Square roots and Cube roots - Problems thereon. Surds and Indices. Illustrations thereon.

14 Hrs

**Unit-III: Theory of equations**

Linear equations, quadratic equations, simultaneous equations in two variables, simple application problems - Problems on Ages, Problems on conditional Age calculations, Present & Past age calculations.

14 Hrs

**Reference Books:**

1. R.S. Aggarwal, *Quantitative Aptitude*, S. Chand and Company Limited, New Delhi -2021.
2. Abhijit Guha, *Quantitative Aptitude*, Mc.Grawhill publications, 5<sup>th</sup> Edition - 2014.
3. R. V. Praveen, *Quantitative Aptitude and Reasoning*, PHI publishers, 3<sup>rd</sup> Edition – 2016.
4. R. S. Aggarwal, *Objective Arithmetic*, S. Chand & Company Ltd, Revised Edition – 2018.
5. Qazi Zameeruddin, Vijay K. Khanna, S. K. Bhambri, *Business Mathematics*, S. Chand publications, 2<sup>nd</sup> Edition - 2009

6. S. K. Sharma and Gurmeet Kaur, *Business Mathematics*, Sultan Chand & Sons – 2019.
7. Hazarika Padmalochan, *A Text Book of Business mathematics for B.Com and BBA Course*, S. Chand Publication - 2017
8. N. G. Dasand, J. K. Das, *Business Mathematics and Statistics*, Mc.Grawhill Education - 2017.

## Open Elective Course

(For Students of other than Science Stream)

| MATOET 3.1(C): Vedic Mathematics |                                       |
|----------------------------------|---------------------------------------|
| Teaching Hours : 3 Hours/Week    | Credits: 3                            |
| Total Teaching Hours: 42 Hours   | Max. Marks: 100(S.A.- 60 + I.A. – 40) |

**Course Outcomes:** This course will enable the students to:

- Understand the Vedic methods of arithmetic
- Understand the Vedic methods of division with two/three digit divisor
- Understand the Vedic methods of power and root power of two digit numbers

### Unit-I: Multiplication:

1. Ekadhikenpurven method (multiplication of two numbers of two digits).
2. Eknunenpurven method (multiplication of two numbers of three digits).
3. Urdhvatrishayam method (multiplication of two numbers of three digits).
4. Nikhilam Navtashchramam Dashtaha (multiplication of two numbers of three digits).
5. Combined Operations.

**14 Hours**

### Unit-II: Division and Divisibility

#### Part A: Division

1. NikhilamNavtashchramamDashtaha (two digits divisor)
2. ParavartyaYojayet method (three digits divisor)

#### Part B: Divisibility

1. Ekadhikenpurven method (two digits divisor)
2. Eknunenpurven method (two digits divisor)

**14 Hours**

### Unit-III:

#### Power and Root Power:

1. Square (two digit numbers)
2. Cube (two digit numbers).

#### Root:

1. Square root (four digit number)
2. Cube root (six digit numbers).
3. Solution of linear simultaneous equations.

**14 Hours**

### Reference Books:

1. *Vedic Mathematics*, Motilal Banarsidass Publishers, NewDelhi -1990
2. *Vedic Ganita: Vihangama Drishti-1*, Siksha Sanskriti Uthana Nyasa, NewDelhi.
3. *Vedic Ganita Praneta*, Siksha Sanskriti Uthana Nyasa, NewDelhi.
4. *Vedic Mathematics: Past, Present and Future*, Siksha Sanskriti Uthana Nyasa, NewDelhi.
5. Leelavati, Chokhambba Vidya Bhavan, Varanasi.
6. *Bharatiya Mathematicians*, Sharda Sanskrit Sansthan, Varanasi.

## SEMESTER – IV

| MATDSCT 4.1: Partial Differential Equations and Integral Transforms |                                           |
|---------------------------------------------------------------------|-------------------------------------------|
| Teaching Hours: 4 Hours/Week                                        | Credits: 4                                |
| Total Teaching Hours: 56 Hours                                      | Max. Marks: 100<br>(SEE - 60 + I.A. – 40) |

**Course Learning Outcomes:** This course will enable the students to

- Solve the Partial Differential Equations of the first order and second order
- Formulate, classify and transform partial differential equations into canonical form.
- Solve linear and non-linear partial differential equations using various methods; and apply these methods to solving some physical problems.
- Able to take more courses on wave equation, heat equation, and Laplace equation.
- Solve PDE by Laplace Transforms and Fourier Transforms

**Unit I:** Basic concepts–Formation of a partial differential equations by elimination of arbitrary constants and functions, Solution of partial differential equations – Solution by Direct integration, Lagrange’s linear equations of the form  $Pp + Qq = R$ , Standard types of first order non-linear partial differential equations, The integrals of the non-linear equation by Charpit’s method.

**14 Hrs**

**Unit II:** Homogeneous linear partial differential equations with constant coefficients. Partial differential equations of the second order. Classification of second-order partial differential equations, canonical forms. Classification of second order linear equations as hyperbolic, parabolic, and elliptic. Solutions of the Heat equation, Laplace equation and Wave equation (using separation of variables).

**14 Hrs**

**Unit III: Laplace Transforms:** Definition, Basic Properties. Laplace transforms of some standard functions. Laplace transform of Periodic functions. Laplace transform of derivative and integral of a function. Heaviside function. Dirac-delta function. Convolution theorem. Inverse Laplace transforms and its properties. Solution of differential equations by using Laplace transforms.

**14 Hrs**

**Unit IV: Fourier Series and Transforms:** Periodic functions. Fourier Coefficients. Fourier series of functions with period 2 and period 2L. Fourier series of even and odd functions. Half range Cosine and Sine series. Fourier Transforms - Finite Fourier Cosine and Sine transform. Transforms of derivatives. Applications of Fourier Transforms.

**14 Hrs**

### Reference Books:

1. D. A. Murray, *Introductory Course in Differential Equations*, Orient and Longman - 2017
2. H. T. H. Piaggio, *Elementary Treatise on Differential Equations and their Applications*, CBS Publisher & Distributors, Delhi - 1985.
3. G. F. Simmons, *Differential Equations*, Tata McGrawHill, 1<sup>st</sup> Edition – 2006.
4. S. L. Ross, *Differential Equations*, John Wiley and Sons, India, 3<sup>rd</sup> Edition -2004.
5. M. D. Raisinghania, *Ordinary Differential Equations & Partial Differential Equations*, S. Chand & Company, New Delhi, 20<sup>th</sup> Edition - 2020

6. K. Sankara Rao, *Introduction to Partial Differential Equations*, PHI, 3<sup>rd</sup> Edition -2015.
7. Ion N. Sneddon, *Elements of Partial differential equations*, McGraw-Hill International Editions -1986.
8. R. Murray and L. Spiegel (Schaum's Series), *Laplace Transforms*, McGraw Hill Education – 2005.
9. J. K. Goyal and K. P. Gupta, *Laplace and Fourier Transforms*, Pragathi Prakashan – 2016.
10. Sudhir Kumar, *Integral Transform Methods in Science & Engineering*, CBS Engineering Series - 2017.
11. Earl David Rainville and Philip Edward Bedient, *A short course in Differential Equations*, Prentice Hall College Div, Pearson College Div, 6<sup>th</sup> edition - 1981.
12. Sathya Prakash, *Mathematical Physics with classical Mechanics*, S Chand and Sons, New Delhi -2014

## PRACTICALS

| <b>MATDSCP 4.1: Practical's on Partial Differential Equations and Integral Transforms</b> |                                                 |
|-------------------------------------------------------------------------------------------|-------------------------------------------------|
| <b>Practical Hours : 4 Hours/Week</b>                                                     | <b>Credits: 2</b>                               |
| <b>Total Teaching Hours: 56 Hours</b>                                                     | <b>Max. Marks: 50<br/>(S.A.-25 + I.A. – 25)</b> |

### Mathematics practical with Free and open Source Software (FOSS) tools for computer programs

**Course Learning Outcomes:** This course will enable the students to

- Learn Free and Open Source software (FOSS) tools or computer programming.
- Solve problems on Partial Differential Equations and Integral Forms
- To find Laplace transform of various functions
- To find the Fourier Transform of periodic functions
- To solve differential equations by using Integral transforms.

Programs using Scilab/Maxima/Python:

- Elements of Partial differential equations and Integral transforms using FOSS
- 1 Solutions of Linear Partial differential equations of type 1 to type 4 and Lagrange's method
- 2 Solutions of partial differential equation using Charpit's method.
- 3 Solutions of Second order homogenous partial differential equation with constant coefficients.
- 4 Solutions to the partial differential equations using separation of variables method (Heat/ Wave/Laplace).
- 5 Finding the Laplace transforms of some standard and periodic functions.
- 6 Finding the inverse Laplace transform of simple functions
- 7 Verification of Convolution Theorem.
- 8 To solve ordinary linear differential equation using Laplace transform.
- 9 To solve Integral equation using Laplace transform.
- 10 To find full range Fourier series of some simple functions with period 2 and 2L
- 11 To find Half range sine and cosine series of some simple functions and plotting them.
- 12 To find Cosine Fourier transforms.
- 13 To find Sine Fourier transforms.

## Open Elective Course

*(For students of Science stream who have not chosen Mathematics as one of the Core Course)*

| MATOET4.1(A): Partial Differential Equations |                                         |
|----------------------------------------------|-----------------------------------------|
| Teaching Hours: 3 Hours/Week                 | Credits: 3                              |
| Total Teaching Hours: 42 Hours               | Max. Marks: 100<br>(SEE-60 + I.A. – 40) |

**Course Learning Outcomes:** This course will enable the students to

- Explain the concept of the differential equation.
- Classifies the differential equations concerning their order and linearity.
- Explains the meaning of the solution of a differential equation.
- Solve first-order ordinary differential equations.
- Solves exact differential equations and Converts separable and homogenous equations to exact differential equations by integrating factors.
- Solves Bernoulli differential equations.
- Will be able to find the solution to higher-order linear differential equations.

**Unit I:** Basic concepts–Formation of a Partial differential equations by elimination of arbitrary constants and functions – Solution of partial differential equations – Solution by Direct integration, Lagrange’s linear equations of the form  $Pp + Qq = R$  . **14 Hrs**

**Unit II :** Standard types of first order non-linear partial differential equations, The integrals of the non-linear equation by Charpit’s method. Homogeneous Linear partial differential equations with constant coefficients. Partial differential equations of the second order. Classification of second- order partial differential equations, canonical forms. **15 Hrs**

**Unit III:** Classification of second order linear equations as hyperbolic, parabolic, and elliptic. Solutions of the Heat equation, Laplace equation and Wave equation (using separation of variables). **14 Hrs**

### Reference Books:

1. D. A. Murray, *Introductory Course in Differential Equations*, Orient and Longman - 2017
2. H. T. H. Piaggio, *Elementary Treatise on Differential Equations and their Applications*, CBS Publisher & Distributors, Delhi - 1985.
3. G. F. Simmons, *Differential Equations*, Tata McGrawHill, 1<sup>st</sup> Edition – 2006.
4. S. L. Ross, *Differential Equations*, John Wiley and Sons, India, 3<sup>rd</sup> Edition -2004.
5. M. R. Spiegel, *Schaum’s outline of Laplace Transforms* – 2005.
6. M. D. Raisinghania, *Ordinary Differential Equations & Partial Differential Equations*, S. Chand & Company, New Delhi, 20<sup>th</sup> Edition - 2020
7. K. Sankara Rao, *Introduction to Partial Differential Equations*, PHI, 3<sup>rd</sup> Edition -2015.
8. Ion N. Sneddon, *Elements of Partial differential equations*, McGraw-Hill International Editions -1986.

**Open Elective Course**  
(For students of other than science stream)

| <b>MATOET4.1(B) : Mathematical Finance</b> |                                           |
|--------------------------------------------|-------------------------------------------|
| <b>Teaching Hours: 3Hours/week</b>         | <b>Credits: 3</b>                         |
| <b>Total Teaching Hours:42Hours</b>        | <b>Max.Marks:100<br/>(S.A-60+I.A.-40)</b> |

**Course Learning Outcomes:** This course will enable the students to

- Understand how compute profit and loss, discount and Banker's discount.
- Understand the concept of Linear equations and inequalities and their use in the solving the Linear Programming Problems.
- Formulation of Transportation Problem and its application in routing problem.

**Unit-I: Commercial Arithmetic**

Bill of exchange, Bill of discounting procedure. Basic formula related to profit, loss, discount and brokerage, Successive discount, True discount, Banker's discount.

**14 Hrs**

**Unit-II: Linear Programming**

Linear equations and inequalities- Rectangular coordinates, straight line, parallel and intersecting lines and linear inequalities, Introduction to linear programming, Mathematical formulation of LPP, Solution of a LPP by graphical method, special cases in graphical method

**14 Hrs**

**Unit-III: Transportation problem**

Introduction, Formulation of Transportation problem, Initial basic feasible solution, Steps involving a transportation problem, optimality check, special cases in Transportation problem. The Traveling salesman Problem (Routing Problem).

**14 Hrs**

**Reference Books:**

1. R. S. Aggarwal, *Objective Arithmetic*, S. Chand & Company Ltd, Revised Edition - 2018.
2. Mizrahiand Sullivan, *Mathematics for Business and Social Sciences an Applied approach*, John Wiley & Sons – 1976.
3. Qazi Zameeruddin,Vijay K Khanna, S K Bhambri, *Business Mathematics*, Vikas Publishing House, 2<sup>nd</sup> Edition.
4. S. Kalavathy, *Operation Research*, Vikas publication house Pvt. Ltd, 4<sup>th</sup> Edition – 2013.
5. Sreenivasa Reddy M, *Operations Research*, Sanguine Technical publishers, Bangalore, 2<sup>nd</sup> edition – 2019.
6. S. D. Sharma, *Operation Research*, 20<sup>th</sup> Edition – 2014.

**Open Elective Course**  
(For students other than science stream)

| <b>MATOET 4.1 (C): Mathematics for Social Sciences</b> |                                                   |
|--------------------------------------------------------|---------------------------------------------------|
| <b>Teaching Hours : 3 Hours/Week</b>                   | <b>Credits: 3</b>                                 |
| <b>Total Teaching Hours: 42 Hours</b>                  | <b>Max. Marks: 100<br/>(S.A.- 60 + I.A. – 40)</b> |

**Course Learning Outcomes:** This course will enable the students to

- Understand the mathematical concept of sets and counting problems.
- Understand the concept of Probability and its applications in social sciences.
- Understand the concept of limits and continuity of functions and its applications in business and



social sciences.

### Unit-I

Sets, counting, permutations, combinations, counting problems, binomial theorem and problems thereon. Probability – Introduction, sample space and assignment of probabilities, properties of the probability of an event, probability of equally likely events, conditional probability, Baye's formula and examples thereon.

**14 Hours**

### Unit-II

Limit and continuity, Derivative- interpretation, derivative formulas, general derivatives for differentiation, composite functions, higher order derivatives and problems thereon.

**14 Hours**

### Unit-III

Applications of the derivative – Relative maxima and Relative minima, Absolute maximum and Absolute minimum, Applied problems, Concavity, Asymptotes, Marginal analysis, Models- Maximizing tax revenue, Optimal trade-in time, and minimizing inventory cost.

**14 Hours**

### REFERENCE BOOKS

1. Abe Mizrahi and Michael Sullivan, *Mathematics for Business and Social Sciences and Applied Approach*, John Wiley & Sons, 4<sup>th</sup> Edition - 1988.
2. Carl P. Simon and Lawrence Blume, *Mathematics for Economists*, Viva Books Private Limited, New Delhi - 2018.
3. L. Peccati, M. D'Amico and M. Cigola, *Maths for Social Sciences*, Springer – 2018.

### Question Paper Pattern

#### Mathematics

#### (Major subject)

| <b>PART –A</b>                                                                                                                                                                          |
|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Answer any <b>TEN</b> questions (10 x 2 = 20) <ul style="list-style-type: none"><li>• Total number of questions: 14</li><li>• Atleast 3 questions to be framed from each unit</li></ul> |
| <b>PART – B</b>                                                                                                                                                                         |
| Answer any 8 questions by choosing two questions from each unit ( 5 marks each) 8 x 5 = 40<br><b>UNITWISE ( 4 questions from each unit )</b>                                            |

#### (Open Elective)

| <b>PART –A</b>                                                                                                                                                     |
|--------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Answer any <b>TEN</b> questions (10 x 2 = 20) <ul style="list-style-type: none"><li>• Total number of questions: 12</li><li>• 4 questions from each unit</li></ul> |
| <b>PART – B</b>                                                                                                                                                    |
| Answer any 6 questions by choosing two questions from each unit ( 6 marks each) 6 x 5 = 36<br><b>UNITWISE ( 4 questions from each unit )</b>                       |



## **Mangalore University**

### **Name of the Degree Program: BSc (Honors) Chemistry with Specialization in Industrial Chemistry**

**Discipline Core: Chemistry      Total Credits for the Program: 176**

**Starting year of implementation: 2021-22**

**Program Outcomes:**

**By the end of the program the students will be able to:**

**(Refer to literature on outcome based education (OBE) for details on Program Outcomes)**

1. **PO. 1:** To instil in students an enthusiasm for industrial chemistry, an appreciation of its application in different contexts, and to involve them in an intellectually stimulating and satisfying experience of learning and studying
2. **PO. 2:** To provide students with broad and balanced knowledge and understanding of key chemical concepts and to develop in students a range of practical skills so that they can understand and assess risks and work safely and competently in the laboratory.
3. **PO. 3:** To develop in students the ability to apply standard methodology to the solution of problems in industrial chemistry
4. **PO. 4:** To provide students with knowledge and skill towards employment or higher education in Industrial chemistry or multi-disciplinary areas involving chemistry and to provide students with the ability to plan and carry out experiments independently and assess the significance of outcomes.
5. **PO. 5:** To develop in students the ability to adapt and apply methodology to the solution of unfamiliar types of problems and to instil critical awareness of advances at the forefront of chemical sciences.
6. **PO. 6:** To prepare students effectively for professional employment or research degrees in chemical sciences and to cater to the demands of chemical Industries of well-trained graduates
7. **PO. 7:** To build confidence in the candidate to be able to work on his own in Industry and Institution of higher education
8. **PO. 8:** To develop an independent and responsible work ethics

**Assessment:**

**Weightage for assessments (in percentage)**

| Type of Course        | Formative Assessment / I A | Summative Assessment |
|-----------------------|----------------------------|----------------------|
| Theory                | 40                         | 60                   |
| Practical             | 25                         | 25                   |
| Projects              | ----                       | ----                 |
| Experiential learning | ----                       | ----                 |

**Curriculum Structure for the Undergraduate Degree Program**  
**BSc (Honors) Chemistry with Specialization in Industrial**  
**Chemistry**

**Total Credits for the Program: 176    Starting year of implementation: 2021-22**

**Name of the Degree Program: B.Sc (Honors)**

**Discipline/Subject: Chemistry**

**Program Articulation Matrix:** This matrix lists only the core courses. Core courses are essential to earn the degree in that discipline/subject. They include courses such as theory, laboratory, project, internships etc. Elective courses may be listed separately.

| Semester | Title /Name<br>Of the course                                       | Program outcomes<br>that the course<br>addresses (not more<br>than 3 per course)                                                                                                                                                                                                                                                                                                                                                                                  | Pre-<br>requisite<br>courses | Pedagogy##              | Assessment\$                                              |
|----------|--------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------|-------------------------|-----------------------------------------------------------|
|          | <b>DSC-1: Analytical<br/>and Organic<br/>Chemistry-I</b>           | <p>The concepts of chemical analysis, accuracy, precision and statistical data treatment</p> <p>Understand the preparation of alkanes, alkenes and alkynes, their reactions, etc.</p> <p>Understand the mechanism of nucleophilic, electrophilic reactions</p>                                                                                                                                                                                                    | P.U.C with Chemistry         | ASSIGNMENT<br>Desk work | Internal Exams,<br>Continuous<br>Evaluation, Sem<br>Exams |
|          | <b>DSC lab-1:<br/>Analytical and<br/>Organic<br/>Practical's-I</b> | <p>The students will be able to learn how to handle the glassware, prepare and dilute solutions and perform the experiments with prepared reagents</p> <p>The students will be able to determine the analyte through volumetric and gravimetric analysis and understand the chemistry involved in each method of analysis.</p> <p>The students will be able to deduce the conversion factor based on stoichiometry and in turn use this value for calculation</p> | ---                          | Assignment<br>Desk work | Internal Exams,<br>Continuous<br>Evaluation, Sem<br>Exams |
|          | <b>DSC-2: Inorganic<br/>and Physical<br/>Chemistry-I</b>           | The Bohr's theory of atomic structure and how it was developed<br>Quantum numbers and their necessity in explaining the atomic structure                                                                                                                                                                                                                                                                                                                          |                              | Assignment<br>Desk work | Internal Exams,<br>Continuous<br>Evaluation, Sem<br>Exams |

|          |                                                                                                                                                                                                        |                                                                                                                                                               |                 |                          |                                                    |
|----------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------|--------------------------|----------------------------------------------------|
|          |                                                                                                                                                                                                        | The concept of unit cell, symmetry elements, Nernst distribution law.                                                                                         |                 |                          |                                                    |
|          | <b>DSC Lab -2: Inorganic and Physical Practical's-I</b>                                                                                                                                                | To prepare standard solutions<br>Techniques like precipitation, filtration, drying and ignition<br><br>Various titrimetric techniques and gravimetric methods |                 | Assignment<br>Desk work  | Internal Exams, Continuous Evaluation, Sem Exams   |
| <b>3</b> | <b>DSC-3: Analytical and Organic Chemistry-II</b><br><b>DSC Lab-3: Analytical and Organic Practical's-II</b>                                                                                           |                                                                                                                                                               | DSC-1 and DSC-2 | Assignment<br>Desk work  | Internal Exams, Continuous Evaluation, Sem Exams   |
| <b>4</b> | <b>DSC-4: Inorganic and Physical Chemistry-II</b><br><b>DSC Lab-4: Inorganic and Physical Practical's-II</b>                                                                                           |                                                                                                                                                               |                 | Assignment<br>Desk work  | Internal Exams, Continuous Evaluation, Sem Exams   |
| <b>5</b> | <b>DSC-5: Selected topics in Inorganic Chemistry</b><br><b>DSC Lab-5: Inorganic Chemistry Practical's</b><br><b>DSC-6: selected topics in Organic Chemistry</b><br><b>DSC Lab-6: Organic Chemistry</b> |                                                                                                                                                               | DSC-3 and DSC-4 | Assignment<br>Desk work  | Internal Exams, Continuous Evaluation, Sem Exams   |
| <b>6</b> | <b>DSC-7: Selected topics in Physical Chemistry</b><br><b>DSC Lab-7: Physical Chemistry Practical's.</b><br><b>DSC-8: Spectroscopy</b><br><b>DSC Lab-8:</b>                                            |                                                                                                                                                               |                 | MOOC,<br>Problem solving | Internal tests, Assignments, Seminar, Debate, Quiz |

|          |                                                                                                                                                                                                                                                                                                                                                               |  |                               |                                |                                                    |
|----------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--|-------------------------------|--------------------------------|----------------------------------------------------|
|          | <b>Analytical and Industrial Chemistry Practical's</b>                                                                                                                                                                                                                                                                                                        |  |                               |                                |                                                    |
| <b>7</b> | <b>DSC-9 :Concepts in classical and modern drug discovery process</b><br><b>DSC Lab-9: Advanced industrial physical chemistry practical</b><br><b>DSC-10: Electroanalytical techniques and electrochemical energy systems</b><br><b>DSC Lab-10: Advanced industrial organic chemistry practical's</b><br><b>DSC-11: Organometallic reagents and catalysis</b> |  | DSC-5, DSC-6, DSC-7 and DSC-8 | MOOC, Problem solving          | Internal tests, Assignments, Seminar, Debate, Quiz |
| <b>8</b> | <b>DSC-12: Inorganic and Organic chemical technology DISCIPLINE A13(4)</b><br><b>DSC-13: Biopolymers, absorption and drug delivery systems</b><br><b>DSC-14: Petroleum, petrochemicals and non-conventional energy systems</b>                                                                                                                                |  |                               | Project work, Industrial Visit | Internal tests, Assignments, Seminar, Debate, Quiz |

##Pedagogy for student engagement is predominantly lectures. However, other pedagogies enhancing better student engagement to be recommended for each course. The list includes active learning/cour

se projects/ problem or project based learning/ case studies/self-study like seminar, term paper or MOOC

\$ Every course needs to include assessment for higher order thinking skills (Applying/ Analyzing/ Evaluating/ Creating). However, this column may contain alternate assessment methods that help formative assessment (i.e. assessment for learning).

| <b>Course Title: DSC-1:Analytical and Organic Chemistry-I</b> |                                |
|---------------------------------------------------------------|--------------------------------|
| Total Contact Hours: 56                                       | Course Credits: 4              |
| Formative Assessment Marks: 40                                | Duration of ESA/Exam: 3 hr.    |
| Model Syllabus Authors: Chairman                              | Summative Assessment Marks: 60 |

**Course Pre-requisite(s):** *Mention only course titles from the curriculum that are needed to be taken by the students before registering for this course.*

***PUC with Chemistry***

**Course Outcomes (COs):**

At the end of the course the student should be able to:

*(Write 3-7 course outcomes. Course outcomes are statements of observable student actions that serve as evidence of knowledge, skills and values acquired in this course)*

1. The concepts of chemical analysis, accuracy, precision and statistical data treatment
2. Prepare the solutions after calculating the required quantity of salts in preparing the reagents/solutions and dilution of stock solution.
3. The concept of volumetric and gravimetric analysis and deducing the conversion factor for determination
4. Handling of toxic chemicals, concentrated acids and organic solvents and practice safety procedures.
5. The concepts of Organic reactions and techniques of writing the movement of electrons, bond breaking, bond forming
6. The Concept of aromaticity, resonance, hyper conjugation, etc.
7. Understand the preparation of alkanes, alkenes and alkynes, their reactions, etc.
8. Understand the mechanism of nucleophilic, electrophilic reactions

**Course Articulation Matrix: Mapping of Course Outcomes (COs) with Program Outcomes (POs 1-12)**

| Course Outcomes (COs) / Program Outcomes (POs) | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 |
|------------------------------------------------|---|---|---|---|---|---|---|---|---|----|----|----|
| 1                                              | X |   |   |   |   |   |   |   |   |    |    |    |
| 2                                              | X |   |   |   |   |   |   |   |   |    |    |    |
| 3                                              | X |   |   |   |   |   |   |   |   |    |    |    |
| 4                                              | X |   |   |   |   |   |   |   |   |    |    |    |
| 5                                              | X |   |   |   |   |   |   |   |   |    |    |    |
| 6                                              | X |   |   |   |   |   |   |   |   |    |    |    |
| 7                                              | X |   |   |   |   |   |   |   |   |    |    |    |
| 8                                              | X |   |   |   |   |   |   |   |   |    |    |    |

Course Articulation Matrix relates course outcomes of course with the corresponding program outcomes whose attainment is attempted in this course. Mark 'X' in the intersection cell if a course outcome addresses a particular program outcome.

### **BSc Semester 1 – Chemistry (Hons) with specialization in Industrial Chemistry**

#### **Title of the Course: DSC-1: Analytical and Organic Chemistry – I**

| Number of Theory Credits | Number of lecture hours/ semester | Number of practical Credits | Number of practical hours/ semesters |
|--------------------------|-----------------------------------|-----------------------------|--------------------------------------|
| 4                        | 56                                | 2                           | 56                                   |

| Content of Theory Course 1                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        | 56 Hr.    |
|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------|
| <b>Unit-1</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     | <b>14</b> |
| <p>Language of analytical chemistry: Definitions of analysis, determination, measurement, techniques and methods. Classification of analytical techniques. Choice of an analytical method - accuracy, precision, sensitivity, selectivity, method validation. Figures of merit of analytical methods and limit of detection (LOD), Limit of quantification (LOQ), linear dynamic range (working range).</p> <p>Errors and treatment of analytical data: Limitations of analytical methods – Errors: Determinate and indeterminate errors, absolute error, relative error, minimization of errors. Statistical treatment of finite samples -mean, median, range, standard deviation and variance. External standard calibration - regression equation (least squares method), correlation coefficient (R<sup>2</sup>).</p> <p>Numerical problems</p> <p>Basic laboratory practices, calibration of glassware (pipette, burette and volumetric flask), Sampling (solids and liquids), weighing, drying, dissolving, Acid treatment, Rules of work in analytical laboratory, General rule for performing quantitative determinations (volumetric and gravimetric), Safety in Chemical laboratory, Rules of fire prevention and accidents, First aid. Precautions to be taken while handling toxic chemicals, concentrated/fuming</p> |           |

|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |           |
|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------|
| acids and organic solvents.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |           |
| <b>Unit-2</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         | <b>14</b> |
| <p>Titrimetric analysis: Basic principle of titrimetric analysis. Classification, Preparation and dilution of reagents/solutions. Normality, Molarity and Mole fraction. Use of <math>N_1V_1 = N_2V_2</math> formula, Preparation of ppm level solutions from source materials (salts), conversion factors.</p> <p>Acid-base titrimetry: Titration curves for strong acid vs strong base, weak acid vs strong base and weak base vs strong acid titrations. Titration curves, Quantitative applications – selecting and standardizing a titrant, inorganic analysis - alkalinity, acidity.</p> <p>Complexometric titrimetry: Indicators for EDTA titrations - theory of metal ion indicators, titration methods employing EDTA - direct, back, displacement and indirect determinations, Application-determination of hardness of water.</p> <p>Redox titrimetry: Balancing redox equations, calculation of the equilibrium constant of redox reactions, titration curves, Theory of redox indicators, calculation of standard potentials using Nernst equation. Applications.</p> <p>Precipitation titrimetry: Titration curves, titrants and standards, indicators for precipitation titrations involving silver nitrate- Volhard's and Mohr's methods and their differences.</p> <p>Gravimetric Analysis: Requisites of precipitation, mechanism of precipitation, Factors influencing precipitation, Co-precipitation, post-precipitation, Advantages of organic reagents over inorganic reagents, reagents used in gravimetry (8-hydroxy quinoline (oxine) and dimethyl glyoxime (DMG)).</p> <p>Numerical problems on all the above aspects.</p> |           |
| <b>Unt-3</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          | <b>14</b> |
| <p>Classification and nomenclature of organic compounds, Hybridization, Shapes of organic molecules, Influence of hybridization on bond properties.</p> <p><b>Nature of bonding in Organic molecules</b></p> <p>Formation of Covalent bond, Types of chemical bonding, localized and delocalized, conjugation and cross conjugation, concept of resonance, electronic displacements: Inductive effect, Electromeric effect, Resonance and Hyper conjugation, cross conjugation explanation with examples. Concept of resonance, aromaticity, Huckel rule, anti-aromaticity explanation with examples. Strengths of Organic acid and bases: Comparative study with emphasis on factors effecting pK values. Relative strength of aliphatic and aromatic carboxylic acids-Acetic acid and chloroacetic acid, acetic acid and propionic acid, acetic acid and Benzoic acid. Steric effect-Relative stability of trans and cis-2-butene.</p> <p><b>Mechanisms of Organic Reactions</b></p> <p>Notations used to represent electron movements and directions of reactions- curly arrows, formal charges. Types of bonds breaking- homolytic and heterolytic. Types of reagents-Electrophiles, nucleophiles, nucleophilicity and basicity. Types of organic reactions- substitution, addition, elimination, rearrangement and pericyclic reactions, explanation with examples.</p> <p>Chemistry of Aliphatic hydrocarbons, Carbon-Carbon Sigma bonds</p> <p>Chemistry of alkanes: Formation of alkanes, Wurtz reaction, Wurtz-Fittig reaction, Free radical substitution, Halogenation- relative reactivity and selectivity</p>                             |           |



|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |           |
|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------|
| <b>Carbon-carbon pi bonds</b><br>Formation of alkenes and alkynes by elimination reaction. Mechanism of E1, E2, E1cb reaction. Saytzeff and Hofmann eliminations. Addition of HBr to propene, Free radical addition of HBr to propene. Addition of halogens to alkenes-carbocation and halonium ion mechanism. Stereospecificity of halogen addition. Ozonolysis mechanism - ozonolysis of propene. Addition of hydrogen halides to alkenes, mechanism, regioselectivity and relative rates of addition. Hydrogenation, hydration, hydroxylation and epoxidation of alkenes, explanation with examples, 1,2 and 1,4- addition reactions in conjugated dienes. Diels-Alder reaction, Allylic and benzylic bromination and mechanism in propene, 1-butene, 1-toluene and ethylbenzene. |           |
| <b>Unit-4</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        | <b>14</b> |
| Nucleophilic substitution at saturated carbon. Mechanism of SN1 and SN2 reactions with suitable examples. Energy profile diagrams, Stereochemistry and factors effecting SN1 and SN2 reactions.<br>Aromatic Electrophilic substitution reactions, Mechanisms, $\sigma$ and $\pi$ complexes, Halogenation, Nitration, Sulphonation, Friedel Crafts alkylation and acylation with their mechanism. Activating and deactivating groups. Orientation influence, Ortho-para ratio.<br>Aromatic nucleophilic substitution reaction: SNAr and Benzyne mechanism with suitable examples                                                                                                                                                                                                      |           |

### Reference Text Books

1. Vogel's Textbook of Quantitative Chemical Analysis, J. Mendham, R.C. Denney, J.D. Barnes and M.J.K. Thomas, 6th edition, Third Indian Reprint, Pearson Education Pvt.Ltd.(2007).
2. Fundamentals of Analytical Chemistry, D.A. Skoog, D.M. West, Holler and Crouch, 8th edition, Saunders College Publishing, New York (2005).
3. Analytical Chemistry, G.D. Christian, 6th edition, Wiley-India (2007).
4. Practical Volumetric Analysis, Peter A C McPherson, Royal Society of Chemistry, Cambridge, UK (2015).
5. Morrison, R. N. & Boyd, R. N. *Organic Chemistry*, Dorling Kindersley (India) Pvt. Ltd. (Pearson Education)
6. Finar, I. L. *Organic Chemistry (Volume I)*, Dorling Kindersley (India) Pvt. Ltd. (Pearson Education)
7. McMurry, J. E. *Fundamentals of Organic Chemistry*, 7th Ed. Cengage Learning India Edition, 2013
8. Organic Reaction mechanism by V. K. Ahluwalia and K. Parashar (Narosa Publishers).
9. Organic Chemistry by S. M. Mukherji, S. P. Singh and R. K. Kapoor. (Narosa Publishers)
10. A Guide book to mechanism in Organic Chemistry by Peter sykes. Pearson.

| Formative Assessment      |                    |
|---------------------------|--------------------|
| Assessment Occasion/ type | Weightage in Marks |
| Internal Test             | 40                 |
| Sem End Exam              | 60                 |
| Total                     | 100                |

**Content of Practical Course 1:** List of Experiments to be conducted

### **PART-A Analytical Chemistry**

1. Calibration of glassware, pipette, burette and volumetric flask.
2. Determination of sodium carbonate and sodium bicarbonate in a mixture.
3. Determination of alkali present in soaps/detergents
4. Determination of iron(II) using potassium dichromate
5. Determination of oxalic acid using potassium permanganate solution
6. Standardization of EDTA solution and determination of hardness of water
7. Standardization of silver nitrate and determination of chloride in a water sample (demonstration)
8. Determination of alkali content in antacids

### **PART-B Organic Chemistry**

1. Selection of suitable solvents for Purification/Crystallization of organic compounds.
2. Preparation of acetanilide from aniline using Zn/acetic acid (Green method).
3. Synthesis of p-nitro acetanilide from acetanilide using nitrating mixture.
4. Bromination of acetanilide (i) Conventional method and/or (ii) with ceric ammonium nitrate and potassium bromide (Green method).
5. Hydrolysis of methyl m-nitrobenzoate to m-nitrobenzoic acid (Conventional method)
6. Synthesis of diazoaminobenzene from aniline (conventional method).
7. Preparation of dibenzalacetone (Green method).
8. Diels Alder reaction between furan and maleic acid (Green method).

## **BSc Semester 1 – Chemistry (Hons) with specialization in Industrial Chemistry**

**Title of the Course: OE-1: CHEMISTRY IN DAILY LIFE**

| Number of Theory Credits | Number of lecture hours/ semester | Number of practical Credits | Number of practical hours/ semesters |
|--------------------------|-----------------------------------|-----------------------------|--------------------------------------|
| 3                        | 42                                | -                           | 42                                   |

| <b>Content of Theory Course 1</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   | <b>42 Hr.</b> |
|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------|
| <b>Unit-1</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       | <b>14</b>     |
| <p><b>Dairy Products:</b> Composition of milk and milk products. Analysis of fat content, minerals in milk and butter. Estimation of added water in milk. Beverages: Analysis of caffeine in coffee and tea, detection of chicory in coffee, chloral hydrate in toddy, determination of methyl alcohol in alcoholic beverages.</p> <p><b>Food additives, adulterants, and contaminants-</b> Food preservatives like benzoates, propionates, sorbates, disulphites. Artificial sweeteners: Aspartame, saccharin, dulcin, sucralose, and sodium cyclamate. Flavors: Vanillin, alkyl esters (fruit flavors), and monosodium glutamate.</p> <p><b>Artificial food colorants:</b> Coal tar dyes and non-permitted colors and metallic salts. Analysis of pesticide residues in food.</p> |               |
| <b>Unit-2</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       | <b>14</b>     |
| <p><b>Vitamins:</b> Classification and Nomenclature. Sources, deficiency diseases, and structures of Vitamin A1, Vitamin B1, Vitamin C, Vitamin D, Vitamin E &amp; Vitamin K1.</p> <p><b>Oils and fats:</b> Composition of edible oils, detection of purity, rancidity of fats and oil. Tests for adulterants like argemone oil and mineral oils. Halphen test.</p> <p><b>Soaps &amp; Detergents:</b> Definition, classification, manufacturing of soaps and detergents, composition and uses</p>                                                                                                                                                                                                                                                                                   |               |
| <b>Unit-3</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       | <b>14</b>     |
| <p><b>Chemical and Renewable Energy Sources:</b> principles and applications of primary &amp; secondary batteries and fuel cells. Basics of solar energy, future energy storer.</p> <p><b>Polymers:</b> Basic concept of polymers, classification and characteristics of polymers. Applications of polymers as plastics in electronic, automobile components, medical fields, and aerospace materials. Problems of plastic waste management. Strategies for the development of environment-friendly polymers.</p>                                                                                                                                                                                                                                                                   |               |

### Reference Text Books

1. B. K. Sharma: Introduction to Industrial Chemistry, Goel Publishing, Meerut (1998)
2. Medicinal Chemistry- Ashtoush Kar.
3. Analysis of Foods – H.E. Cox: 13.
4. Chemical Analysis of Foods – H.E. Cox and Pearson.
5. Foods: Facts and Principles. N. Shakuntala Many and S. Swamy, 4th ed. New Age International (1998)
6. Physical Chemistry – P I Atkins and J. de Paula – 7th Ed. 2002, Oxford University Press.
7. Handbook on Fertilizer Technology by Swaminathan and Goswamy, 6th ed. 2001, FAI.
8. Organic Chemistry by I. L. Finar, Vol. 1 & 2. 9. Polymer Science and Technology, J. R. Fried (Prentice Hall).

| Formative Assessment      |                    |
|---------------------------|--------------------|
| Assessment Occasion/ type | Weightage in Marks |
| Internal Test             | 40                 |
| Sem End Exam              | 60                 |
| Total                     | 100                |

**BSc Semester 2 – Chemistry (Hons) with specialization in Industrial Chemistry**  
**Title of the Course: DSC – 2: INORGANIC AND PHYSICAL CHEMISTRY - I**

| Number of Theory Credits | Number of lecture hours/ semester | Number of practical Credits | Number of practical hours/ semesters |
|--------------------------|-----------------------------------|-----------------------------|--------------------------------------|
| 4                        | 56                                | 2                           | 56                                   |

| Content of Theory Course 2                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            | 56Hr      |
|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------|
| <b>Unit-1</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         | <b>14</b> |
| Bohr's theory, its limitations and atomic spectrum of hydrogen atom. Wave mechanics: de Broglie equation, Heisenberg's Uncertainty Principle and its significance, Schrödinger's wave equation, significance of $\psi$ and $\psi^2$ . Quantum numbers and their significance.<br>Normalized and orthogonal wave functions. Sign of wave functions. Radial and angular wave functions for hydrogen atom. Radial and angular distribution curves. Shapes of s, p, d and f orbitals. Contour boundary and probability diagrams.<br>Pauli's Exclusion Principle, Hund's rule of maximum multiplicity, Aufbau's principle and its limitations- Electronic configurations of the elements (Z=1-30), effective nuclear charge, shielding/screening effect, Slater's rules. Variation of effective nuclear charge in Periodic Table.          |           |
| <b>Unit-2</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         | <b>14</b> |
| s, p, d and f-block elements, the long form of periodic table. Detailed discussion of the following properties of the elements, with reference to s and p-block elements:<br>(a) Atomic radii (van der Waals)<br>(b) Ionic and crystal radii.<br>(c) Covalent radii<br>(d) Ionization enthalpy, successive ionization enthalpies and factors affecting ionization energy. Applications of ionization enthalpy.<br>(e) Electron gain enthalpy, trends of electron gain enthalpy.<br>(f) Electronegativity, Pauling's/ Mulliken's/ Allred Rachow's/ and Mulliken-Jaffé's electronegativity scales. Variation of electronegativity with bond order, partial charge, hybridization, group electronegativity.<br>Trends in the chemistry of the compounds of groups 13 to 17 (hydrides, carbides, oxides and halides) are to be discussed. |           |
| <b>Unit-3</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         | <b>14</b> |
| <b>Gaseous State</b><br>Elementary aspects of kinetic theory of gases, Ideal and real gases. Boyle temperature (derivation not required), Molecular velocity, collision frequency,                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |           |

|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |           |
|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------|
| <p>collision diameter, Collision cross section, collision number and mean free path and coefficient of viscosity, calculation of <math>\sigma</math> and <math>\eta</math>, variation of viscosity with temperature and pressure.</p> <p>Maxwell's Boltzmann distribution law of molecular velocities (Most probable, average and root mean square velocities). Relation between RMS, average and most probable velocity and average kinetic energies. (Mathematical derivation not required), law of equipartition of energy.</p> <p>Behaviour of real gases: Deviation from ideal gas behaviour. Compressibility factor (Z) and its variation with pressure for different gases. Causes of deviation from ideal behaviour, vander Waals equation of state (No derivation) and application in explaining real gas behaviour. Critical phenomena - Andrews isotherms of CO<sub>2</sub>, critical constants and their calculation from van der Waals equation, Continuity of states, Law of corresponding states. Numerical problems.</p> <p><b>Liquid State</b></p> <p><b>Surface Tension:</b> Definition and its determination using stalagmometer, effect of temperature and solute on surface tension</p> <p><b>Viscosity:</b> Definition, Coefficient of viscosity. Determination of viscosity of a liquid using Oswald viscometer. Effect of temperature, size, weight, shape of molecules and intermolecular forces.</p> <p><b>Refraction:</b> Specific and molar refraction- definition and advantages. Determination of refractive index by Abbes Refractometer.</p> <p>Additive and constitutive properties.</p> <p><b>Parachor:</b> Definition, Atomic and structure parachor, Elucidation of structure of benzene and benzoquinone. Viscosity and molecular structure. Molar refraction and chemical constitution.</p> <p>Numerical Problems.</p> |           |
| <b>Unit-4</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                | <b>14</b> |
| <p><b>Solids</b></p> <p><b>Forms of solids:</b> Unit cell and space lattice, anisotropy of crystals, size and shape of crystals,</p> <p>Laws of Crystallography: Law of constancy of interfacial angles, Law of rational indices, Law of symmetry (Symmetry elements), Crystal systems, Bravais lattice types and identification of lattice planes.</p> <p>Miller indices and its calculation, X-Ray diffraction by crystals: Bragg's law and derivation of Bragg's equation, Single crystal and powder diffraction methods. Defects in crystals, glasses and liquid crystals. Numerical problems.</p> <p><b>Liquid Crystals</b></p> <p>Explanation, classification with examples- Smectic, nematic, cholesteric, disc shaped and polymeric. Structures of nematic and cholesteric phases-molecular arrangements in nematic and cholesteric liquid crystals. Applications of liquid crystals in LCDs and thermal sensing.</p> <p><b>Distribution Law</b></p> <p>Nernst Distribution Law - Statement and its derivation. Distribution constant, factors affecting distribution constant, validity of Distribution Law, Modification of distribution law when molecules undergo a) Association b) Dissociation. Application of Distribution Law in Solvent extraction. Derivation for simple and multiple extraction. Principles of distribution law in Parkes Process of desilverisation of lead. Numerical Problems.</p>                                                                                                                                                                                                                                                                                                                                                                                                                                     |           |

## Reference Text Books

1. Concise Inorganic Chemistry: J D Lee, 4th Edn, Wiley, (2021)
2. Fundamentals Concepts of Inorganic Chemistry, Vol 1 and 2, 2nd Edition, Asim K Das, CBS Publishers and Distributors, (2013)
3. Basic Inorganic Chemistry, F A Cotton, G Wilkinson and P. L. Gaus, 3rd Edition. Wiley. India
4. Inorganic Chemistry, 2nd Edn. Catherine E. Housecroft and A.G. Sharpe, Pearson Prentice Hall (2005)
5. Atkins Physical Chemistry.8th Edition. Peter Atkins & Julio De Paula Oxford University Press.
6. Physical Chemistry by Samuel Glasstone, ELBS (1982).
7. A Text book of Physical Chemistry, A S Negi & S C Anand, New Age International Publishers (2007).
8. Principles of Physical Chemistry, Puri, Sharma & Pathania, Vishal Publishing Co.
9. A Text Book of Physical Chemistry P.L.Soni , O.P. Dharmarhaand and U.N.Dash, Sultan Chand and Sons.
10. Advanced Physical Chemistry, Gurdeep Raj, Goel Publishing House (2018)

| Formative Assessment      |                    |
|---------------------------|--------------------|
| Assessment Occasion/ type | Weightage in Marks |
| Internal Test             | 40                 |
| Sem End Exam              | 60                 |
| Total                     | 100                |

## Content of Practical Course 2: List of Experiments to be conducted

### PART-A Inorganic Chemistry

#### TITRIMETRY

1. Determination of carbonate and hydroxide present in a mixture.
2. Determination of oxalic acid and sodium oxalate in a given mixture using standard  $\text{KMnO}_4/\text{NaOH}$  solution
3. Standardization of potassium permanganate solution and determination of nitrite in a water sample
4. Determination of chlorine in bleaching powder using iodometric method.

#### GRAVIMETRY

1. Determination of  $\text{Ba}^{2+}$  as  $\text{BaSO}_4$
2. Determination of  $\text{Cu}^{2+}$  as  $\text{CuSCN}$
3. Determination of  $\text{Fe}^{2+}$  as  $\text{Fe}_2\text{O}_3$
4. Determination of  $\text{Ni}^{2+}$  as  $\text{Ni(DMG)}_2$  complex

## PART-B Physical Chemistry

1. Safety Practices in the Chemistry Laboratory, Knowledge about common toxic chemicals and safety measures in their handling, cleaning and drying of glassware's
2. Determination of density using specific gravity bottle and viscosity of liquids using Ostwald's viscometer (Ethyl acetate, Toluene, Chloroform, Chlorobenzene or any other non-hazardous liquids)
3. Study of the variation of viscosity of sucrose solution with the concentration of a solute
4. Determination of the density using specific gravity bottle and surface tension of liquids using Stalagmometer (Ethyl acetate, Toluene, Chlorobenzene, any other non-hazardous liquids)
5. Study of variation of surface tension of detergent solution with concentration.
6. Determination of specific and molar refraction by Abbes Refractometer. (Ethyl acetate, Methyl acetate, Ethylene Chloride)
7. Determination of the composition of liquid mixture by refractometry. (Toluene & Alcohol, Water & Sucrose)
8. Determination of partition/distribution coefficient - i) Acetic acid in water and cyclohexane. ii) Acetic acid in Water and Butanol. iii) Benzoic acid in water and toluene.

## BSc Semester 2 – Chemistry (Hons) with specialization in Industrial Chemistry

Title of the Course: OE – 2: Molecules of Life

| Number of Theory Credits | Number of lecture hours/ semester | Number of practical Credits | Number of practical hours/ semesters |
|--------------------------|-----------------------------------|-----------------------------|--------------------------------------|
| 3                        | 42                                | -                           | 42                                   |

| Content of Theory Course 2                                                                                                                                                                                                                                                                                                                                                          | 42 Hr.    |
|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------|
| <b>Unit-1</b>                                                                                                                                                                                                                                                                                                                                                                       | <b>14</b> |
| <b>Carbohydrates</b><br>Classification of carbohydrates, reducing and non-reducing sugars, General properties of glucose and fructose, their open chain structures. Epimers, mutarotation and anomers.<br>Linkage between monosaccharides, structure of disaccharides (sucrose, maltose, lactose) and polysaccharides (starch and cellulose) excluding their structure elucidation. |           |
| <b>Amino Acids, Peptides and Proteins</b><br>Classification of amino acids, Zwitterion structure and Isoelectric point. Overview of Primary, Secondary, Tertiary and Quaternary structure of proteins. Determination of primary structure of peptides.                                                                                                                              |           |
| <b>Unit-2</b>                                                                                                                                                                                                                                                                                                                                                                       | <b>14</b> |
| <b>Enzymes and correlation with drug action</b><br>Mechanism of enzyme action, factors affecting enzyme action, Co-enzymes and                                                                                                                                                                                                                                                      |           |

|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |           |
|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------|
| <p>cofactors and their role in biological reactions, Specificity of enzyme action (including stereospecificity),</p> <p>Enzyme inhibitors and their importance, phenomenon of inhibition (Competitive and Non competitive inhibition including allosteric inhibition).</p> <p><b>Drug action</b>-receptor theory. Structure–activity relationships of drug molecules, binding role of –OH group, -NH<sub>2</sub> group, double bond and aromatic ring</p> <p><b>Lipids</b></p> <p>Introduction to lipids, classification. Biological importance of triglycerides, phospholipids, glycolipids, and steroids (cholesterol).</p>                                                                                                                                                                                                                                                                                                                                                                                                                |           |
| <b>Unit-3</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                | <b>14</b> |
| <p><b>Nucleic Acids</b></p> <p>Components of nucleic acids: Adenine, guanine, thymine and cytosine (Structure only), other components of nucleic acids, Nucleosides and nucleotides (<b>nomenclature</b>), Structure of polynucleotides; Structure of DNA (Watson-Crick model) and RNA (<b>types of RNA</b>), Genetic Code, Biological roles of DNA and RNA: Replication, Transcription and Translation.</p> <p><b>Concept of Energy in Biosystems</b></p> <p>Calorific value of food. Standard caloric content of carbohydrates, proteins and fats. Oxidation of foodstuff (organic molecules) as a source of energy for cells. Introduction to Metabolism (catabolism, anabolism), ATP: the universal currency of cellular energy, ATP hydrolysis and free energy change. Conversion of food into energy. Outline of catabolic pathways of Carbohydrate- Glycolysis, Fermentation, Krebs Cycle. Overview of catabolic pathways of Fats and Proteins. Interrelationships in the metabolic pathways of Proteins, Fats and Carbohydrates.</p> |           |

### Reference Text Books

1. Morrison, R. T. & Boyd, R. N. *Organic Chemistry*, Dorling Kindersley (India) Pvt. Ltd. (Pearson Education).
2. Finar, I. L. *Organic Chemistry (Volume 1)*, Dorling Kindersley (India) Pvt. Ltd. (Pearson Education).
3. Finar, I. L. *Organic Chemistry (Volume 2)*, Dorling Kindersley (India) Pvt. Ltd. (Pearson Education).
4. Nelson, D. L. & Cox, M. M. *Lehninger's Principles of Biochemistry 7th Ed.*,
5. W. H. Freeman. Berg, J.M., Tymoczko, J.L. & Stryer, L. *Biochemistry*, , 2002.

| Formative Assessment      |                    |
|---------------------------|--------------------|
| Assessment Occasion/ type | Weightage in Marks |
| Internal Test             | 40                 |
| Sem End Exam              | 60                 |
| Total                     | 100                |

Sd/-



# MANGALORE UNIVERSITY

## Name of the Degree Program: BSc (Honors) Chemistry with Analytical Specialization

Discipline Core: Chemistry      Total Credits for the Program: 176

Starting year of implementation: 2021-22

### Program Outcomes:

By the end of the program the students will be able to:

(Refer to literature on outcome based education (OBE) for details on Program Outcomes)

1. **PO. 1:** To create enthusiasm among students for Analytical chemistry and its application in various fields of life.
2. **PO. 2:** To provide students with broad and balanced knowledge and understanding of key concepts in Analytical chemistry
3. **PO. 3:** To develop in students a range of practical skills so that they can understand and assess risks and work safely measures to be followed in the laboratory.
4. **PO. 4:** To develop in students the ability to apply standard methodology to the solution of problems in chemistry
5. **PO. 5:** To provide students with knowledge and skill towards employment or higher education in Analytical chemistry or multi-disciplinary areas involving Analytical chemistry.
6. **PO. 6:** To provide students with the ability to plan and carry out experiments independently and assess the significance of outcomes and to cater to the demands of chemical Industries of well-trained graduates
7. **PO. 7:** To develop in students the ability to adapt and apply methodology to the solution of unfamiliar types of problems.
8. **PO. 8:** To instil critical awareness of advances at the forefront of chemical sciences, to prepare students effectively for professional employment or research degrees in chemical sciences and to develop an independent and responsible work ethics

### Assessment:

#### Weightage for assessments (in percentage)

| Type of Course                              | Formative Assessment / IA | Summative Assessment |
|---------------------------------------------|---------------------------|----------------------|
| Theory                                      | 40                        | 60                   |
| Practical                                   | 25                        | 25                   |
| Projects                                    | -                         | -                    |
| Experiential Learning<br>(Internships etc.) | -                         | -                    |

## Curriculum Structure for the Undergraduate Degree Program BSc (Honors) Chemistry with Analytical Specialization

**Total Credits for the Program: 176      Starting year of implementation: 2021-22**

**Name of the Degree Program: B. Sc (Honors) Discipline/Subject: Chemistry**

### Program Articulation Matrix:

This matrix lists only the core courses. Core courses are essential to earn the degree in that discipline/subject. They include courses such as theory, laboratory, project, internships etc. Elective courses may be listed separately

| Semester | Title /Name<br>Of the course                             | Program outcomes<br>that the course<br>addresses (not more<br>than 3 per course)                                                                                                                                                                                                                                                                                            | Pre-<br>requisite<br>course(s) | Pedagogy##              | Assessment\$                                                 |
|----------|----------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------|-------------------------|--------------------------------------------------------------|
| 1        | DSC-1:<br>Analytical and<br>Organic<br>Chemistry-I       | <ul style="list-style-type: none"> <li>The concepts of chemical analysis, accuracy, precision and statistical data treatment</li> <li>Understand the preparation of alkanes, alkenes and alkynes, their reactions, etc.</li> <li>Understand the mechanism of nucleophilic, electrophilic reactions</li> </ul>                                                               | P.U.C with Chemistry           | Assignment<br>Desk work | Internal<br>Exams,<br>Continuous<br>Evaluation,<br>Sem Exams |
|          | DSC lab-1:<br>Analytical and<br>Organic<br>Practical's-I | <ul style="list-style-type: none"> <li>The students will be able to learn how to handle the glassware, prepare and dilute solutions and perform the experiments with prepared reagents</li> <li>The students will be able to determine the analyte through volumetric and gravimetric analysis and understand the chemistry involved in each method of analysis.</li> </ul> | -                              | Assignment<br>Desk work | Internal<br>Exams,<br>Continuous<br>Evaluation,<br>Sem Exams |

|   |                                                                                                              |                                                                                                                                                                                                                                                                                 |                 |                         |                                                  |
|---|--------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------|-------------------------|--------------------------------------------------|
|   |                                                                                                              | <ul style="list-style-type: none"> <li>The students will be able to deduce the conversion factor based on stoichiometry and in turn use this value for calculation</li> </ul>                                                                                                   |                 |                         |                                                  |
| 2 | <b>DSC-2: Inorganic and Physical Chemistry-I</b>                                                             | <ul style="list-style-type: none"> <li>The Bohr's theory of atomic structure and how it was developed</li> <li>Quantum numbers and their necessity in explaining the atomic structure</li> <li>The concept of unit cell, symmetry elements, Nernst distribution law.</li> </ul> | -               | Assignment<br>Desk work | Internal Exams, Continuous Evaluation, Sem Exams |
|   | <b>DSC Lab -2: Inorganic and Physical Practical's-I</b>                                                      | <ul style="list-style-type: none"> <li>To prepare standard solutions</li> <li>Techniques like precipitation, filtration, drying and ignition</li> <li>Various titrimetric techniques and gravimetric methods</li> </ul>                                                         |                 | Assignment<br>Desk work | Internal Exams, Continuous Evaluation, Sem Exams |
| 3 | <b>DSC-3: Analytical and Organic Chemistry-II</b><br><b>DSC Lab-3: Analytical and Organic Practical's-II</b> |                                                                                                                                                                                                                                                                                 | DSC-1 and DSC-2 | Assignment<br>Desk work | Internal Exams, Continuous Evaluation, Sem Exams |
|   |                                                                                                              |                                                                                                                                                                                                                                                                                 |                 |                         |                                                  |
| 4 | <b>DSC-4: Inorganic and Physical Chemistry-II</b><br><b>DSC Lab-4: Inorganic and Physical Practical's-II</b> |                                                                                                                                                                                                                                                                                 |                 | Assignment<br>Desk work | Internal Exams, Continuous Evaluation, Sem Exams |

|    |                                                                                                                                                                                                                                      |  |                               |                                |                                                    |
|----|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--|-------------------------------|--------------------------------|----------------------------------------------------|
|    |                                                                                                                                                                                                                                      |  |                               |                                |                                                    |
| 5. | <b>DSC-5: Selected topics in Inorganic Chemistry</b><br><b>DSC Lab-5: Inorganic Chemistry Practical's</b><br><b>DSC-6: selected topics in Organic Chemistry</b><br><b>DSC Lab-6: Organic Chemistry Practical's</b>                   |  | DSC-3 and DSC-4               | MOOC, Problem solving          | Internal tests, Assignments, Quiz                  |
|    |                                                                                                                                                                                                                                      |  |                               |                                |                                                    |
| 6. | <b>DSC-7: Selected topics in Physical Chemistry</b><br><b>DSC Lab-7: Physical Chemistry Practical's.</b><br><b>DSC-8: Spectroscopy</b><br><b>DSC Lab-8: Analytical and Industrial Chemistry Practical's</b>                          |  |                               | MOOC, Problem solving          | Internal tests, Assignments, Quiz                  |
|    |                                                                                                                                                                                                                                      |  |                               |                                |                                                    |
| 7. | <b>DSC-9 :Analytical Techniques-I</b><br><b>DSC Lab-9: Analytical Chemistry.</b><br><b>DSC-10:Applied Chemical Analysis.</b><br><b>DSC Lab-10 :Analytical Chemistry.</b><br><b>DSC-11: Enviornmental and Nanomaterial Chemistry.</b> |  | DSC-5, DSC-6, DSC-7 and DSC-8 | MOOC, Problem solving          | Internal tests, Assignments, Seminar, Debate, Quiz |
|    |                                                                                                                                                                                                                                      |  |                               |                                |                                                    |
| 8. | <b>DSC-12: Analytical Techniques-II</b><br><b>DISIPLINE A13(4)</b><br><b>DSC-13: Separation and Electroanalytical Techniques.</b><br><b>DSC-14: Analysis of food and pharmaceuticals</b>                                             |  |                               | Project work, Industrial Visit | Internal tests, Assignments, Seminar, Debate, Quiz |

\$ Every course needs to include assessment for higher order thinking skills (Applying/ Analyzing/ Evaluating/ Creating). However, this column may contain alternate assessment methods that help formative assessment (i.e. assessment for learning).

|                                                         |                                |
|---------------------------------------------------------|--------------------------------|
| Course Title: DSC-1: Analytical and Organic Chemistry-I |                                |
| Total Contact Hours: 56                                 | Course Credits: 4              |
| Formative Assessment Marks: 40                          | Duration of ESA/Exam: 3 hrs    |
| Model Syllabus Authors: Chairman                        | Summative Assessment Marks: 60 |

## PUC with Chemistry

At the end of the course the student should be able to:

1. The concepts of chemical analysis, accuracy, precision and statistical data treatment
2. Prepare the solutions after calculating the required quantity of salts in preparing the reagents/solutions and dilution of stock solution.
3. The concept of volumetric and gravimetric analysis and deducing the conversion factor for determination
4. Handling of toxic chemicals, concentrated acids and organic solvents and practice safety procedures.
5. The concepts of Organic reactions and techniques of writing the movement of electrons, bond breaking, bond forming
6. The Concept of aromaticity, resonance, hyper conjugation, etc.
7. Understand the preparation of alkanes, alkenes and alkynes, their reactions, etc.
8. Understand the mechanism of nucleophilic, electrophilic reactions

[illegible]

|   |   |  |  |  |  |  |  |  |  |  |  |  |  |
|---|---|--|--|--|--|--|--|--|--|--|--|--|--|
| 6 | X |  |  |  |  |  |  |  |  |  |  |  |  |
| 7 | X |  |  |  |  |  |  |  |  |  |  |  |  |
| 8 | X |  |  |  |  |  |  |  |  |  |  |  |  |

Course Articulation Matrix relates course outcomes of course with the corresponding program outcomes whose attainment is attempted in this course. Mark 'X' in the intersection cell if a course outcome addresses a particular program outcome.

### BA/BSc/BCom/BBA/BCA

#### BSc Semester 1 – Chemistry (Hons) with specialization in Analytical Chemistry

#### Title of the Course: DSC-1: Analytical and Organic Chemistry – I

| Number of Theory Credits                                                                                                                                                                                                                                                                                                                                                                                                                                                                           | Number of lecture hours/ semester | Number of practical Credits | Number of practical hours/ semesters |
|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------|-----------------------------|--------------------------------------|
| 4                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  | 56                                | 2                           | 56                                   |
| Content of Theory Course 1                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |                                   |                             | 56Hrs                                |
| Unit – 1                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |                                   |                             | 14                                   |
| Language of analytical chemistry: Definitions of analysis, determination, measurement, techniques and methods. Classification of analytical techniques. Choice of an analytical method - accuracy, precision, sensitivity, selectivity, method validation. Figures of merit of analytical methods and limit of detection (LOD), Limit of quantification (LOQ), linear dynamic range (working range).                                                                                               |                                   |                             |                                      |
| Errors and treatment of analytical data: Limitations of analytical methods – Errors: Determinate and indeterminate errors, absolute error, relative error, minimization of errors. Statistical treatment of finite samples -mean, median, range, standard deviation and variance. External standard calibration - regression equation (least squares method), correlation coefficient ( $R^2$ ).                                                                                                   |                                   |                             |                                      |
| Numerical problems                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |                                   |                             |                                      |
| Basic laboratory practices, calibration of glassware (pipette, burette and volumetric flask), Sampling (solids and liquids), weighing, drying, dissolving, Acid treatment, Rules of work in analytical laboratory, General rule for performing quantitative determinations (volumetric and gravimetric), Safety in Chemical laboratory, Rules of fire prevention and accidents, First aid. Precautions to be taken while handling toxic chemicals, concentrated/fuming acids and organic solvents. |                                   |                             |                                      |
| Unit - 2                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |                                   |                             | 14                                   |
| Titrimetric analysis: Basic principle of titrimetric analysis. Classification, Preparation and dilution of reagents/solutions. Normality, Molarity and Mole fraction. Use of $N_1V_1 = N_2V_2$ formula, Preparation of ppm level solutions from source materials (salts), conversion factors.                                                                                                                                                                                                      |                                   |                             |                                      |
| Acid-base titrimetry: Titration curves for strong acid vs strong base, weak acid vs strong base and weak base vs strong acid titrations. Titration curves, Quantitative applications – selecting and standardizing a titrant, inorganic analysis - alkalinity, acidity.                                                                                                                                                                                                                            |                                   |                             |                                      |
| Complexometric titrimetry: Indicators for EDTA titrations - theory of metal ion indicators, titration methods employing EDTA - direct, back, displacement and indirect determinations, Application-determination of hardness of water.                                                                                                                                                                                                                                                             |                                   |                             |                                      |
| Redox titrimetry: Balancing redox equations, calculation of the equilibrium constant of redox                                                                                                                                                                                                                                                                                                                                                                                                      |                                   |                             |                                      |

|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |           |
|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------|
| <p>reactions, titration curves, Theory of redox indicators, calculation of standard potentials using Nernst equation. Applications.</p> <p>Precipitation titrimetry: Titration curves, titrants and standards, indicators for precipitation titrations involving silver nitrate- Volhard's and Mohr's methods and their differences.</p> <p>Gravimetric Analysis: Requisites of precipitation, mechanism of precipitation, Factors influencing precipitation, Co-precipitation, post-precipitation, Advantages of organic reagents over inorganic reagents, reagents used in gravimetry (8-hydroxy quinoline (oxine) and dimethyl glyoxime (DMG)).</p> <p>Numerical problems on all the above aspects.</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |           |
| <b>Unit - 3</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            | <b>14</b> |
| <p>Classification and nomenclature of organic compounds, Hybridization, Shapes of organic molecules, Influence of hybridization on bond properties.</p> <p><b>Nature of bonding in Organic molecules</b></p> <p>Formation of Covalent bond, Types of chemical bonding, localized and delocalized, conjugation and cross conjugation, concept of resonance, electronic displacements: Inductive effect, Electromeric effect, Resonance and Hyper conjugation, cross conjugation explanation with examples. Concept of resonance, aromaticity, Huckel rule, anti-aromaticity explanation with examples. Strengths of Organic acid and bases: Comparative study with emphasis on factors effecting pK values. Relative strength of aliphatic and aromatic carboxylic acids-Acetic acid and chloroacetic acid, acetic acid and propionic acid, acetic acid and Benzoic acid. Steric effect- Relative stability of trans and cis-2-butene.</p> <p><b>Mechanisms of Organic Reactions</b></p> <p>Notations used to represent electron movements and directions of reactions- curly arrows, formal charges. Types of bonds breaking- homolytic and heterolytic. Types of reagents-Electrophiles, nucleophiles, nucleophilicity and basicity. Types of organic reactions- substitution, addition, elimination, rearrangement and pericyclic reactions, explanation with examples.</p> <p>Chemistry of Aliphatic hydrocarbons, Carbon-Carbon Sigma bonds</p> <p>Chemistry of alkanes: Formation of alkanes, Wurtz reaction, Wurtz-Fittig reaction, Free radical substitution, Halogenation- relative reactivity and selectivity</p> <p><b>Carbon-carbon pi bonds</b></p> <p>Formation of alkenes and alkynes by elimination reaction. Mechanism of E1, E2, E1cb reaction. Saytzeff and Hofmann eliminations. Addition of HBr to propene, Free radical addition of HBr to propene. Addition of halogens to alkenes-carbocation and halonium ion mechanism. Stereospecificity of halogen addition. Ozonolysis mechanism - ozonolysis of propene. Addition of hydrogen halides to alkenes, mechanism, regioselectivity and relative rates of addition. Hydrogenation, hydration, hydroxylation and epoxidation of alkenes, explanation with examples, 1,2 and 1,4- addition reactions in conjugated dienes. Diels-Alder reaction, Allylic and benzylic bromination and mechanism in propene, 1-butene, 1-toluene and ethylbenzene.</p> |           |
| <b>Unit - 4</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            | <b>14</b> |
| <p>Nucleophilic substitution at saturated carbon. Mechanism of <math>S_N^1</math> and <math>S_N^2</math> reactions with suitable examples. Energy profile diagrams, Stereochemistry and factors effecting <math>S_N^1</math> and <math>S_N^2</math> reactions.</p> <p>Aromatic Electrophilic substitution reactions, Mechanisms, <math>\sigma</math> and <math>\pi</math> complexes, Halogenation, Nitration, Sulphonation, Friedel Crafts alkylation and acylation with their mechanism. Activating and deactivating groups. Orientation influence, Ortho-para ratio.</p> <p>Aromatic nucleophilic substitution reaction: <math>S_N^Ar</math> and Benzyne mechanism with suitable examples</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |           |

### Text Books

1. Vogel's Textbook of Quantitative Chemical Analysis, J. Mendham, R.C. Denney, J.D. Barnes and M.J.K. Thomas, 6<sup>th</sup> edition, Third Indian Reprint, Pearson Education Pvt.Ltd.(2007).
2. Fundamentals of Analytical Chemistry, D.A. Skoog, D.M. West, Holler and Crouch, 8<sup>th</sup> edition, Saunders College Publishing, New York (2005).
3. Analytical Chemistry, G.D. Christian, 6<sup>th</sup> edition, Wiley-India (2007).
4. Practical Volumetric Analysis, Peter A C McPherson, Royal Society of Chemistry, Cambridge, UK (2015).
5. Morrison, R. N. & Boyd, R. N. *Organic Chemistry*, Dorling Kindersley (India) Pvt. Ltd. (Pearson Education)
6. Finar, I. L. *Organic Chemistry (Volume I)*, Dorling Kindersley (India) Pvt. Ltd. (Pearson Education)

7. McMurry, J. E. *Fundamentals of Organic Chemistry*, 7<sup>th</sup> Ed. Cengage Learning India Edition, 2013
8. Organic Reaction mechanism by V. K. Ahluwalia and K. Parashar (Narosa Publishers).
9. Organic Chemistry by S. M. Mukherji, S. P. Singh and R. K. Kapoor. (Narosa Publishers)
10. A Guide book to mechanism in Organic Chemistry by Peter sykes. Pearson.

## References

## Pedagogy

| Formative Assessment      |                    |
|---------------------------|--------------------|
| Assessment Occasion/ type | Weightage in Marks |
| Internal Test             | 40                 |
| Sem End Exam              | 60                 |
| <b>Total</b>              | <b>100</b>         |

## Content of Practical Course 1: List of Experiments to be conducted

### PART-A Analytical Chemistry

1. Calibration of glassware, pipette, burette and volumetric flask.
2. Determination of sodium carbonate and sodium bicarbonate in a mixture.
3. Determination of alkali present in soaps/detergents
4. Determination of iron(II) using potassium dichromate
5. Determination of oxalic acid using potassium permanganate solution
6. Standardization of EDTA solution and determination of hardness of water
7. Standardization of silver nitrate and determination of chloride in a water sample (demonstration)
8. Determination of alkali content in antacids

### PART-B Organic Chemistry

1. Selection of suitable solvents for Purification/Crystallization of organic compounds.
2. Preparation of acetanilide from aniline using Zn/acetic acid (Green method).
3. Synthesis of p-nitro acetanilide from acetanilide using nitrating mixture.
4. Bromination of acetanilide (i) Conventional method and/or (ii) with ceric ammonium nitrate and potassium bromide (Green method).
5. Hydrolysis of methyl m-nitrobenzoate to m-nitrobenzoic acid (Conventional method)
6. Synthesis of diazoaminobenzene from aniline (conventional method).
7. Preparation of dibenzalacetone (Green method).
8. Diels Alder reaction between furan and maleic acid (Green method).



## BSc Semester 1 – Chemistry (Hons) with specialization in Analytical Chemistry

### Title of the Course: OE-1: CHEMISTRY IN DAILY LIFE

| Number of Theory Credits                                                                                                                                                                                                                                                                                                    | Number of lecture hours/ semester | Number of practical Credits | Number of practical hours/ semesters |
|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------|-----------------------------|--------------------------------------|
| 3                                                                                                                                                                                                                                                                                                                           | 42                                | -                           | 42                                   |
| <b>Content of Theory Course 1</b>                                                                                                                                                                                                                                                                                           |                                   |                             | <b>42 Hrs</b>                        |
| <b>Unit – 1</b>                                                                                                                                                                                                                                                                                                             |                                   |                             | <b>14</b>                            |
| <b>Dairy Products:</b> Composition of milk and milk products. Analysis of fat content, minerals in milk and butter. Estimation of added water in milk. Beverages: Analysis of caffeine in coffee and tea, detection of chicory in coffee, chloral hydrate in toddy, determination of methyl alcohol in alcoholic beverages. |                                   |                             |                                      |
| <b>Food additives, adulterants, and contaminants-</b> Food preservatives like benzoates, propionates, sorbates, disulphites. Artificial sweeteners: Aspartame, saccharin, dulcin, sucralose, and sodium cyclamate. Flavors: Vanillin, alkyl esters (fruit flavors), and monosodium glutamate.                               |                                   |                             |                                      |
| <b>Artificial food colorants:</b> Coal tar dyes and non-permitted colors and metallic salts. Analysis of pesticide residues in food.                                                                                                                                                                                        |                                   |                             |                                      |
| <b>Unit - 2</b>                                                                                                                                                                                                                                                                                                             |                                   |                             | <b>14</b>                            |
| <b>Vitamins:</b> Classification and Nomenclature. Sources, deficiency diseases, and structures of Vitamin A1, Vitamin B1, Vitamin C, Vitamin D, Vitamin E & Vitamin K1.                                                                                                                                                     |                                   |                             |                                      |
| <b>Oils and fats:</b> Composition of edible oils, detection of purity, rancidity of fats and oil. Tests for adulterants like argemone oil and mineral oils. Halphen test.                                                                                                                                                   |                                   |                             |                                      |
| <b>Soaps &amp; Detergents:</b> Definition, classification, manufacturing of soaps and detergents, composition and uses                                                                                                                                                                                                      |                                   |                             |                                      |
| <b>Unit - 3</b>                                                                                                                                                                                                                                                                                                             |                                   |                             | <b>14</b>                            |
| <b>Chemical and Renewable Energy Sources:</b> principles and applications of primary & secondary batteries and fuel cells. Basics of solar energy, future energy storer.                                                                                                                                                    |                                   |                             |                                      |
| <b>Polymers:</b> Basic concept of polymers, classification and characteristics of polymers. Applications of polymers as plastics in electronic, automobile components, medical fields, and aerospace materials. Problems of plastic waste management. Strategies for the development of environment-friendly polymers.      |                                   |                             |                                      |

### Text Books

1. B. K. Sharma: Introduction to Industrial Chemistry, Goel Publishing, Meerut (1998)
2. Medicinal Chemistry- Ashtoush Kar.
3. Analysis of Foods – H.E. Cox: 13.
4. Chemical Analysis of Foods – H.E. Cox and Pearson.
5. Foods: Facts and Principles. N. Shakuntala Many and S. Swamy, 4<sup>th</sup>ed. New Age International (1998)
6. Physical Chemistry – P I Atkins and J. de Paula – 7<sup>th</sup>Ed. 2002, Oxford University Press.

7. Handbook on Fertilizer Technology by Swaminathan and Goswamy, 6<sup>th</sup> ed. 2001, FAI.
8. Organic Chemistry by I. L. Finar, Vol. 1 & 2. 9. Polymer Science and Technology, J. R. Fried (Prentice Hall).

## References

## Pedagogy

| Formative Assessment      |                    |
|---------------------------|--------------------|
| Assessment Occasion/ type | Weightage in Marks |
| Internal Test             | 40                 |
| Sem End Exam              | 60                 |
| <b>Total</b>              | 100                |

**BSc Semester 2 – Chemistry (Hons) with specialization in Analytical Chemistry**  
**Title of the Course: DSC – 2: INORGANIC AND PHYSICAL CHEMISTRY - I**

| Number of Theory Credits                                                                                                                                                                                                                                                                                                                                             | Number of lecture hours/semester | Number of practical Credits | Number of practical hours/ semesters |
|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------|-----------------------------|--------------------------------------|
| 4                                                                                                                                                                                                                                                                                                                                                                    | 56                               | 2                           | 56                                   |
| <b>Content of Theory Course 2</b>                                                                                                                                                                                                                                                                                                                                    |                                  |                             | <b>56Hrs</b>                         |
| <b>Unit – 1</b>                                                                                                                                                                                                                                                                                                                                                      |                                  |                             | <b>14</b>                            |
| Bohr's theory, its limitations and atomic spectrum of hydrogen atom. Wave mechanics: de Broglie equation, Heisenberg's Uncertainty Principle and its significance, Schrödinger's wave equation, significance of $\psi$ and $\psi^2$ . Quantum numbers and their significance.                                                                                        |                                  |                             |                                      |
| Normalized and orthogonal wave functions. Sign of wave functions. Radial and angular wave functions for hydrogen atom. Radial and angular distribution curves. Shapes of s, p, d and f orbitals. Contour boundary and probability diagrams.                                                                                                                          |                                  |                             |                                      |
| Pauli's Exclusion Principle, Hund's rule of maximum multiplicity, Aufbau's principle and its limitations- Electronic configurations of the elements (Z=1-30), effective nuclear charge, shielding/screening effect, Slater's rules. Variation of effective nuclear charge in Periodic Table.                                                                         |                                  |                             |                                      |
| <b>Unit - 2</b>                                                                                                                                                                                                                                                                                                                                                      |                                  |                             | <b>14</b>                            |
| s, p, d and f-block elements, the long form of periodic table. Detailed discussion of the following properties of the elements, with reference to s and p-block elements:                                                                                                                                                                                            |                                  |                             |                                      |
| (a) Atomic radii (van der Waals)                                                                                                                                                                                                                                                                                                                                     |                                  |                             |                                      |
| (b) Ionic and crystal radii.                                                                                                                                                                                                                                                                                                                                         |                                  |                             |                                      |
| (c) Covalent radii                                                                                                                                                                                                                                                                                                                                                   |                                  |                             |                                      |
| (d) Ionization enthalpy, successive ionization enthalpies and factors affecting ionization energy. Applications of ionization enthalpy.                                                                                                                                                                                                                              |                                  |                             |                                      |
| (e) Electron gain enthalpy, trends of electron gain enthalpy.                                                                                                                                                                                                                                                                                                        |                                  |                             |                                      |
| (f) Electronegativity, Pauling's/ Mulliken's/ Allred Rachow's/ and Mulliken-Jaffé's electronegativity scales. Variation of electronegativity with bond order, partial charge, hybridization, group electronegativity.                                                                                                                                                |                                  |                             |                                      |
| Trends in the chemistry of the compounds of groups 13 to 17 (hydrides, carbides, oxides and halides) are to be discussed.                                                                                                                                                                                                                                            |                                  |                             |                                      |
| <b>Unit - 3</b>                                                                                                                                                                                                                                                                                                                                                      |                                  |                             | <b>14</b>                            |
| <b><u>Gaseous State</u></b>                                                                                                                                                                                                                                                                                                                                          |                                  |                             |                                      |
| Elementary aspects of kinetic theory of gases, Ideal and real gases. Boyle temperature (derivation not required), Molecular velocity, collision frequency, collision diameter, Collision cross section, collision number and mean free path and coefficient of viscosity, calculation of $\sigma$ and $\eta$ , variation of viscosity with temperature and pressure. |                                  |                             |                                      |
| Maxwell's Boltzmann distribution law of molecular velocities (Most probable, average and root mean square velocities). Relation between RMS, average and most probable velocity and average kinetic energies. (Mathematical derivation not required), law of equipartition of                                                                                        |                                  |                             |                                      |

|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |           |
|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------|
| <p>energy.</p> <p>Behaviour of real gases: Deviation from ideal gas behaviour. Compressibility factor (Z) and its variation with pressure for different gases. Causes of deviation from ideal behaviour, vander Waals equation of state (No derivation) and application in explaining real gas behaviour. Critical phenomena - Andrews isotherms of CO<sub>2</sub>, critical constants and their calculation from van der Waals equation, Continuity of states, Law of corresponding states. Numerical problems.</p> <p><b>Liquid State</b></p> <p><b>Surface Tension:</b> Definition and its determination using stalagmometer, effect of temperature and solute on surface tension</p> <p><b>Viscosity:</b> Definition, Coefficient of viscosity. Determination of viscosity of a liquid using Oswald viscometer. Effect of temperature, size, weight, shape of molecules and intermolecular forces.</p> <p><b>Refraction:</b> Specific and molar refraction- definition and advantages. Determination of refractive index by Abbe's Refractometer.</p> <p>Additive and constitutive properties.</p> <p><b>Parachor:</b> Definition, Atomic and structure parachor, Elucidation of structure of benzene and benzoquinone. Viscosity and molecular structure. Molar refraction and chemical constitution.</p> <p>Numerical Problems.</p>                                                                                |           |
| <b>Unit - 4</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          | <b>14</b> |
| <p><b>Liquid Crystals</b></p> <p>Explanation, classification with examples- Smectic, nematic, cholesteric, disc shaped and polymeric. Structures of nematic and cholesteric phases-molecular arrangements in nematic and cholesteric liquid crystals. Applications of liquid crystals in LCDs and thermal sensing.</p> <p><b>Solids</b></p> <p><b>Forms of solids:</b> Unit cell and space lattice, anisotropy of crystals, size and shape of crystals,</p> <p>Laws of Crystallography: Law of constancy of interfacial angles, Law of rational indices, Law of symmetry (Symmetry elements), Crystal systems, Bravais lattice types and identification of lattice planes.</p> <p>Miller indices and its calculation, X-Ray diffraction by crystals: Bragg's law and derivation of Bragg's equation, Single crystal and powder diffraction methods. Defects in crystals, glasses and liquid crystals. Numerical problems.</p> <p><b>Distribution Law</b></p> <p>Nernst Distribution Law - Statement and its derivation. Distribution constant, factors affecting distribution constant, validity of Distribution Law, Modification of distribution law when molecules undergo a) Association b) Dissociation. Application of Distribution Law in Solvent extraction. Derivation for simple and multiple extraction. Principles of distribution law in Parkes Process of desilverisation of lead. Numerical Problems.</p> |           |

### Text Books

1. Concise Inorganic Chemistry: J D Lee, 4<sup>th</sup> Edn, Wiley, (2021)
2. Fundamentals Concepts of Inorganic Chemistry, Vol 1 and 2, 2<sup>nd</sup> Edition, Asim K Das, CBS Publishers and Distributors, (2013)
3. Basic Inorganic Chemistry, F A Cotton, G Wilkinson and P. L. Gaus, 3<sup>rd</sup> Edition. Wiley. India
4. Inorganic Chemistry, 2<sup>nd</sup> Edn. Catherine E. Housecroft and A.G. Sharpe, Pearson Prentice Hall (2005)
5. Atkins Physical Chemistry. 8<sup>th</sup> Edition. Peter Atkins & Julio De Paula Oxford University Press.
6. Physical Chemistry by Samuel Glasstone, ELBS (1982).

7. A Text book of Physical Chemistry, A S Negi & S C Anand, New Age International Publishers (2007).
8. Principles of Physical Chemistry, Puri, Sharma & Pathania, Vishal Publishing Co.
9. A Text Book of Physical Chemistry P.L.Soni , O.P. Dharmarhaand and U.N.Dash, Sultan Chand and Sons.
10. Advanced Physical Chemistry, Gurdeep Raj, Goel Publishing House (2018)

## References

## Pedagogy

| Formative Assessment      |                    |
|---------------------------|--------------------|
| Assessment Occasion/ type | Weightage in Marks |
| Internal Test             | 40                 |
| Sem End Exam              | 60                 |
| <b>Total</b>              | <b>100</b>         |

Date \_\_\_\_\_ Course Co-ordinator \_\_\_\_\_ Subject Committee Chairperson \_\_\_\_\_

## Content of Practical Course 2: List of Experiments to be conducted

### PART-A Inorganic Chemistry

#### TITRIMETRY

1. Determination of carbonate and hydroxide present in a mixture.
2. Determination of oxalic acid and sodium oxalate in a given mixture using standard  $\text{KMnO}_4/\text{NaOH}$  solution
3. Standardization of potassium permanganate solution and determination of nitrite in a water sample
4. Determination of chlorine in bleaching powder using iodometric method.

#### GRAVIMETRY

1. Determination of  $\text{Ba}^{2+}$  as  $\text{BaSO}_4$
2. Determination of  $\text{Cu}^{2+}$  as  $\text{CuSCN}$
3. Determination of  $\text{Fe}^{2+}$  as  $\text{Fe}_2\text{O}_3$
4. Determination of  $\text{Ni}^{2+}$  as  $\text{Ni(DMG)}_2$  complex.

### PART-B Physical Chemistry

1. Safety Practices in the Chemistry Laboratory, Knowledge about common toxic chemicals and safety measures in their handling, cleaning and drying of glassware's
2. Determination of density using specific gravity bottle and viscosity of liquids using Ostwald's viscometer (Ethyl acetate, Toluene, Chloroform, Chlorobenzene or any other non-hazardous liquids)
3. Study of the variation of viscosity of sucrose solution with the concentration of a solute
4. Determination of the density using specific gravity bottle and surface tension of liquids using Stalagmometer (Ethyl acetate, Toluene, Chlorobenzene, any other non-hazardous liquids)

5. Study of variation of surface tension of detergent solution with concentration.
6. Determination of specific and molar refraction by Abbes Refractometer. (Ethyl acetate, Methyl acetate, Ethylene Chloride)
7. Determination of the composition of liquid mixture by refractometry. (Toluene & Alcohol, Water & Sucrose)
8. Determination of partition/distribution coefficient - i) Acetic acid in water and cyclohexane. ii) Acetic acid in Water and Butanol. iii) Benzoic acid in water and toluene.

## BSc Semester 2 – Chemistry (Hons) with specialization in Analytical Chemistry

### Title of the Course: OE – 2: Molecules of Life

| Number of Theory Credits                                                                                                                                                                                  | Number of lecture hours/semester | Number of practical Credits | Number of practical hours/ semesters |
|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------|-----------------------------|--------------------------------------|
| 3                                                                                                                                                                                                         | 42                               | -                           | 42                                   |
| <b>Content of Theory Course 2</b>                                                                                                                                                                         |                                  |                             | <b>42 Hrs</b>                        |
| <b>Unit – 1</b>                                                                                                                                                                                           |                                  |                             | <b>14</b>                            |
| <b>Carbohydrates</b>                                                                                                                                                                                      |                                  |                             |                                      |
| Classification of carbohydrates, reducing and non-reducing sugars, General properties of glucose and fructose, their open chain structures. Epimers, mutarotation and anomers.                            |                                  |                             |                                      |
| Linkage between monosaccharides, structure of disaccharides (sucrose, maltose, lactose) and polysaccharides (starch and cellulose) excluding their structure elucidation.                                 |                                  |                             |                                      |
| <b>Amino Acids, Peptides and Proteins</b>                                                                                                                                                                 |                                  |                             |                                      |
| Classification of amino acids, Zwitterion structure and Isoelectric point. Overview of Primary, Secondary, Tertiary and Quaternary structure of proteins. Determination of primary structure of peptides. |                                  |                             |                                      |
| <b>Unit - 2</b>                                                                                                                                                                                           |                                  |                             | <b>14</b>                            |
| <b>Enzymes and correlation with drug action</b>                                                                                                                                                           |                                  |                             |                                      |
| Mechanism of enzyme action, factors affecting enzyme action, Co-enzymes and cofactors and their role in biological reactions, Specificity of enzyme action (including stereospecificity),                 |                                  |                             |                                      |
| Enzyme inhibitors and their importance, phenomenon of inhibition (Competitive and Non competitive inhibition including allosteric inhibition).                                                            |                                  |                             |                                      |
| <b>Drug action-receptor theory.</b> Structure–activity relationships of drug molecules, binding role of –OH group, -NH <sub>2</sub> group, double bond and aromatic ring                                  |                                  |                             |                                      |
| <b>Lipids</b>                                                                                                                                                                                             |                                  |                             |                                      |
| Introduction to lipids, classification. Biological importance of triglycerides, phospholipids, glycolipids, and steroids (cholesterol).                                                                   |                                  |                             |                                      |
| <b>Unit - 3</b>                                                                                                                                                                                           |                                  |                             | <b>14</b>                            |
| <b>Nucleic Acids</b>                                                                                                                                                                                      |                                  |                             |                                      |
| Components of nucleic acids: Adenine, guanine, thymine and cytosine (Structure only), other components of nucleic acids, Nucleosides and nucleotides ( <b>nomenclature</b> ),                             |                                  |                             |                                      |

Structure of polynucleotides; Structure of DNA (Watson-Crick model) and RNA (**types of RNA**), Genetic Code, Biological roles of DNA and RNA: Replication, Transcription and Translation.

### Concept of Energy in Biosystems

Calorific value of food. Standard caloric content of carbohydrates, proteins and fats. Oxidation of foodstuff (organic molecules) as a source of energy for cells. Introduction to Metabolism (catabolism, anabolism), ATP: the universal currency of cellular energy, ATP hydrolysis and free energy change. Conversion of food into energy. Outline of catabolic pathways of Carbohydrate- Glycolysis, Fermentation, Krebs Cycle. Overview of catabolic pathways of Fats and Proteins. Interrelationships in the metabolic pathways of Proteins, Fats and Carbohydrates.

### Text Books

1. Morrison, R. T. & Boyd, R. N. *Organic Chemistry*, Dorling Kindersley (India) Pvt. Ltd. (Pearson Education).
2. Finar, I. L. *Organic Chemistry (Volume 1)*, Dorling Kindersley (India) Pvt. Ltd. (Pearson Education).
3. Finar, I. L. *Organic Chemistry (Volume 2)*, Dorling Kindersley (India) Pvt. Ltd. (Pearson Education).
4. Nelson, D. L. & Cox, M. M. *Lehninger's Principles of Biochemistry 7th Ed.*,
5. W. H. Freeman. Berg, J.M., Tymoczko, J.L. & Stryer, L. *Biochemistry*, , 2002.

### References

| Formative Assessment      |                    |
|---------------------------|--------------------|
| Assessment Occasion/ type | Weightage in Marks |
| Internal Test             | 40                 |
| Sem End Exam              | 60                 |
| <b>Total</b>              | <b>100</b>         |

Sd/-

## MANGALORE UNIVERSITY

**Name of the Degree Program: BSc (Honors) Chemistry with Organic Specialization**

**Discipline Core: Chemistry      Total Credits for the Program: 176**

**Starting year of implementation: 2021-22**

### **Program Outcomes:**

**By the end of the program the students will be able to:**

**(Refer to literature on outcome based education (OBE) for details on Program Outcomes)**

1. **PO. 1:** To create enthusiasm among students for organic chemistry and its application in various fields of life.
2. **PO. 2:** To provide students with broad and balanced knowledge and understanding of key concepts in organic chemistry
3. **PO. 3:** To develop in students a range of practical skills so that they can understand and assess risks and work safely measures to be followed in the laboratory.
4. **PO. 4:** To develop among students the ability to apply standard methodology to the solution of problems in organic chemistry
5. **PO. 5:** To provide students with knowledge and skill towards employment or higher education in organic chemistry or multi-disciplinary areas involving organic chemistry.
6. **PO. 6:** To provide students with the ability to plan and carry out experiments independently and assess the significance of outcomes and to cater to the demands of chemical Industries through well-trained graduates
7. **PO. 7:** To develop in students the ability to adapt and apply methodology to the solution of unfamiliar types of problems.
8. **PO. 8:** To instil critical awareness of advances at the forefront of chemical sciences, to prepare students effectively for professional employment or research degrees in chemical sciences with emphasis on organic chemistry and to develop an independent and responsible work ethics

### **Assessment:**

#### **Weightage for assessments (in percentage)**

| Type of Course                           | Formative Assessment / IA | Summative Assessment |
|------------------------------------------|---------------------------|----------------------|
| Theory                                   | 40                        | 60                   |
| Practical                                | 25                        | 25                   |
| Projects                                 | -                         | -                    |
| Experiential Learning (Internships etc.) | -                         | -                    |



## Curriculum Structure for the Undergraduate Degree Program BSc (Honors) Chemistry with Organic Specialization

**Total Credits for the Program: 176      Starting year of implementation: 2021-22**

**Name of the Degree Program: B. Sc (Honors) Discipline/Subject: Chemistry**

### Program Articulation Matrix:

This matrix lists only the core courses. Core courses are essential to earn the degree in that discipline/subject. They include courses such as theory, laboratory, project, internships etc. Elective courses may be listed separately

| Semester | Title /Name<br>Of the course                             | Program outcomes<br>that the course<br>addresses (not more<br>than 3 per course)                                                                                                                                                                                                                                                                                            | Pre-<br>requisite<br>course(s) | Pedagogy##              | Assessment\$                                                 |
|----------|----------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------|-------------------------|--------------------------------------------------------------|
| 1        | DSC-1:<br>Analytical and<br>Organic<br>Chemistry-I       | <ul style="list-style-type: none"> <li>The concepts of chemical analysis, accuracy, precision and statistical data treatment</li> <li>Understand the preparation of alkanes, alkenes and alkynes, their reactions, etc.</li> <li>Understand the mechanism of nucleophilic, electrophilic reactions</li> </ul>                                                               | P.U.C with Chemistry           | Assignment<br>Desk work | Internal<br>Exams,<br>Continuous<br>Evaluation,<br>Sem Exams |
|          | DSC lab-1:<br>Analytical and<br>Organic<br>Practical's-I | <ul style="list-style-type: none"> <li>The students will be able to learn how to handle the glassware, prepare and dilute solutions and perform the experiments with prepared reagents</li> <li>The students will be able to determine the analyte through volumetric and gravimetric analysis and understand the chemistry involved in each method of analysis.</li> </ul> | -                              | Assignment<br>Desk work | Internal<br>Exams,<br>Continuous<br>Evaluation,<br>Sem Exams |

|   |                                                                                                              |                                                                                                                                                                                                                                                                                 |                 |                         |                                                  |
|---|--------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------|-------------------------|--------------------------------------------------|
|   |                                                                                                              | <ul style="list-style-type: none"> <li>The students will be able to deduce the conversion factor based on stoichiometry and in turn use this value for calculation</li> </ul>                                                                                                   |                 |                         |                                                  |
| 2 | <b>DSC-2: Inorganic and Physical Chemistry-I</b>                                                             | <ul style="list-style-type: none"> <li>The Bohr's theory of atomic structure and how it was developed</li> <li>Quantum numbers and their necessity in explaining the atomic structure</li> <li>The concept of unit cell, symmetry elements, Nernst distribution law.</li> </ul> | -               | Assignment<br>Desk work | Internal Exams, Continuous Evaluation, Sem Exams |
|   | <b>DSC Lab -2: Inorganic and Physical Practical's-I</b>                                                      | <ul style="list-style-type: none"> <li>To prepare standard solutions</li> <li>Techniques like precipitation, filtration, drying and ignition</li> <li>Various titrimetric techniques and gravimetric methods</li> </ul>                                                         |                 | Assignment<br>Desk work | Internal Exams, Continuous Evaluation, Sem Exams |
| 3 | <b>DSC-3: Analytical and Organic Chemistry-II</b><br><b>DSC Lab-3: Analytical and Organic Practical's-II</b> |                                                                                                                                                                                                                                                                                 | DSC-1 and DSC-2 | Assignment<br>Desk work | Internal Exams, Continuous Evaluation, Sem Exams |
|   |                                                                                                              |                                                                                                                                                                                                                                                                                 |                 |                         |                                                  |
| 4 | <b>DSC-4: Inorganic and Physical Chemistry-II</b><br><b>DSC Lab-4: Inorganic and Physical Practical's-II</b> |                                                                                                                                                                                                                                                                                 |                 | Assignment<br>Desk work | Internal Exams, Continuous Evaluation, Sem Exams |

|    |                                                                                                                                                                                                                                                                                           |  |                               |                                |                                                    |
|----|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--|-------------------------------|--------------------------------|----------------------------------------------------|
|    |                                                                                                                                                                                                                                                                                           |  |                               |                                |                                                    |
| 5. | <b>DSC-5: Selected topics in Inorganic Chemistry</b><br><b>DSC Lab-5: Inorganic Chemistry Practical's</b><br><b>DSC-6: selected topics in Organic Chemistry</b><br><b>DSC Lab-6: Organic Chemistry Practical's</b>                                                                        |  | DSC-3 and DSC-4               | MOOC, Problem solving          | Internal tests, Assignments, Quiz                  |
|    |                                                                                                                                                                                                                                                                                           |  |                               |                                |                                                    |
| 6. | <b>DSC-7: Selected topics in Physical Chemistry</b><br><b>DSC Lab-7: Physical Chemistry Practical's.</b><br><b>DSC-8: Spectroscopy</b><br><b>DSC Lab-8: Analytical and Industrial Chemistry Practical's</b>                                                                               |  |                               | MOOC, Problem solving          | Internal tests, Assignments, Quiz                  |
|    |                                                                                                                                                                                                                                                                                           |  |                               |                                |                                                    |
| 7. | <b>DSC-9: Advanced Organic Chemistry-I</b><br><b>DSC Lab-9: Multistep Organic Synthesis.</b><br><b>DSC-10: Synthetic Reagents and Spectroscopic Techniques.</b><br><b>DSC Lab-10: Isolation and Separation Techniques</b><br><b>DSC-11: Reaction Mechanism and Organic Photochemistry</b> |  | DSC-5, DSC-6, DSC-7 and DSC-8 | MOOC, Problem solving          | Internal tests, Assignments, Seminar, Debate, Quiz |
|    |                                                                                                                                                                                                                                                                                           |  |                               |                                |                                                    |
| 8. | <b>DSC-12: Synthetic Methods</b><br><b>DSC-13: Natural Product Chemistry</b><br><b>DSC-14: Advanced Organic</b>                                                                                                                                                                           |  |                               | Project work, Industrial Visit | Internal tests, Assignments, Seminar, Debate, Quiz |

|  |                     |  |  |  |  |
|--|---------------------|--|--|--|--|
|  | <b>Chemistry-II</b> |  |  |  |  |
|--|---------------------|--|--|--|--|

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## Pedagogy for student engagement is predominantly lectures. However, other pedagogies enhancing better student engagement to be recommended for each course. The list includes active learning/ course projects/ problem or project based learning/ case studies/self study like seminar, term paper or MOOC

\$ Every course needs to include assessment for higher order thinking skills (Applying/ Analyzing/ Evaluating/ Creating). However, this column may contain alternate assessment methods that help formative assessment (i.e. assessment for learning).

## BSc Chemistry (Honors) with Organic Specialization Semester 1

|                                                         |                                |
|---------------------------------------------------------|--------------------------------|
| Course Title: DSC-1: Analytical and Organic Chemistry-I |                                |
| Total Contact Hours: 56                                 | Course Credits: 4              |
| Formative Assessment Marks: 40                          | Duration of ESA/Exam: 3 hrs    |
| Model Syllabus Authors: Chairman                        | Summative Assessment Marks: 60 |

**Course Pre-requisite(s):** *Mention only course titles from the curriculum that are needed to be taken by the students before registering for this course.*

## ***PUC with Chemistry***

**Course Outcomes (COs):**

At the end of the course the student should be able to:

*(Write 3-7 course outcomes. Course outcomes are statements of observable student actions that serve as evidence of knowledge, skills and values acquired in this course)*

1. The concepts of chemical analysis, accuracy, precision and statistical data treatment
2. Prepare the solutions after calculating the required quantity of salts in preparing the reagents/solutions and dilution of stock solution.
3. The concept of volumetric and gravimetric analysis and deducing the conversion factor for determination
4. Handling of toxic chemicals, concentrated acids and organic solvents and practice safety procedures.
5. The concepts of Organic reactions and techniques of writing the movement of electrons, bond breaking, bond forming
6. The Concept of aromaticity, resonance, hyper conjugation, etc.
7. Understand the preparation of alkanes, alkenes and alkynes, their reactions, etc.
8. Understand the mechanism of nucleophilic, electrophilic reactions

**Course Articulation Matrix: Mapping of Course Outcomes (COs) with Program Outcomes (POs 1-12)**

[illegible]

Course Articulation Matrix relates course outcomes of course with the corresponding program outcomes whose attainment is attempted in this course. Mark 'X' in the intersection cell if a course outcome addresses a particular program outcome.

### BSc Semester 1 – Chemistry (Hons) with Organic Specialization

#### Title of the Course: DSC-1: Analytical and Organic Chemistry – I

| Number of Theory Credits                                                                                                                                                                                                                                                                                                                                                                                                                                                                           | Number of lecture hours/ semester | Number of practical Credits | Number of practical hours/ semesters |
|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------|-----------------------------|--------------------------------------|
| 4                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  | 56                                | 2                           | 56                                   |
| <b>Content of Theory Course 1</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |                                   |                             | <b>56Hrs</b>                         |
| <b>Unit – 1</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |                                   |                             | <b>14</b>                            |
| Language of analytical chemistry: Definitions of analysis, determination, measurement, techniques and methods. Classification of analytical techniques. Choice of an analytical method - accuracy, precision, sensitivity, selectivity, method validation. Figures of merit of analytical methods and limit of detection (LOD), Limit of quantification (LOQ), linear dynamic range (working range).                                                                                               |                                   |                             |                                      |
| Errors and treatment of analytical data: Limitations of analytical methods – Errors: Determinate and indeterminate errors, absolute error, relative error, minimization of errors. Statistical treatment of finite samples -mean, median, range, standard deviation and variance. External standard calibration - regression equation (least squares method), correlation coefficient ( $R^2$ ).                                                                                                   |                                   |                             |                                      |
| Numerical problems                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |                                   |                             |                                      |
| Basic laboratory practices, calibration of glassware (pipette, burette and volumetric flask), Sampling (solids and liquids), weighing, drying, dissolving, Acid treatment, Rules of work in analytical laboratory, General rule for performing quantitative determinations (volumetric and gravimetric), Safety in Chemical laboratory, Rules of fire prevention and accidents, First aid. Precautions to be taken while handling toxic chemicals, concentrated/fuming acids and organic solvents. |                                   |                             |                                      |
| <b>Unit – 2</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |                                   |                             | <b>14</b>                            |
| Titrimetric analysis: Basic principle of titrimetric analysis. Classification, Preparation and dilution of reagents/solutions. Normality, Molarity and Mole fraction. Use of $N_1V_1 = N_2V_2$ formula, Preparation of ppm level solutions from source materials (salts), conversion factors.                                                                                                                                                                                                      |                                   |                             |                                      |
| Acid-base titrimetry: Titration curves for strong acid vs strong base, weak acid vs strong base and weak base vs strong acid titrations. Titration curves, Quantitative applications – selecting and standardizing a titrant, inorganic analysis - alkalinity, acidity.                                                                                                                                                                                                                            |                                   |                             |                                      |
| Complexometric titrimetry: Indicators for EDTA titrations - theory of metal ion indicators, titration methods employing EDTA - direct, back, displacement and indirect determinations, Application-determination of hardness of water.                                                                                                                                                                                                                                                             |                                   |                             |                                      |
| Redox titrimetry: Balancing redox equations, calculation of the equilibrium constant of redox reactions, titration curves, Theory of redox indicators, calculation of standard potentials using Nernst equation. Applications.                                                                                                                                                                                                                                                                     |                                   |                             |                                      |
| Precipitation titrimetry: Titration curves, titrants and standards, indicators for precipitation titrations involving silver nitrate- Volhard's and Mohr's methods and their differences.                                                                                                                                                                                                                                                                                                          |                                   |                             |                                      |
| Gravimetric Analysis: Requisites of precipitation, mechanism of precipitation, Factors influencing precipitation, Co-precipitation, post-precipitation, Advantages of organic reagents over inorganic reagents, reagents used in gravimetry (8-hydroxy quinoline (oxine) and dimethyl glyoxime (DMG)).                                                                                                                                                                                             |                                   |                             |                                      |
| Numerical problems on all the above aspects.                                                                                                                                                                                                                                                                                                                                                                                                                                                       |                                   |                             |                                      |
| <b>Unit – 3</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |                                   |                             | <b>14</b>                            |
| Classification and nomenclature of organic compounds, Hybridization, Shapes of organic molecules, Influence of hybridization on bond properties.                                                                                                                                                                                                                                                                                                                                                   |                                   |                             |                                      |
| <b>Nature of bonding in Organic molecules</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                      |                                   |                             |                                      |
| Formation of Covalent bond, Types of chemical bonding, localized and delocalized, conjugation and cross conjugation, concept of resonance, electronic displacements: Inductive effect, Electromeric                                                                                                                                                                                                                                                                                                |                                   |                             |                                      |

|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |           |
|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------|
| <p>effect, Resonance and Hyper conjugation, cross conjugation explanation with examples. Concept of resonance, aromaticity, Huckel rule, anti-aromaticity explanation with examples. Strengths of Organic acid and bases: Comparative study with emphasis on factors effecting pK values. Relative strength of aliphatic and aromatic carboxylic acids-Acetic acid and chloroacetic acid, acetic acid and propionic acid, acetic acid and Benzoic acid. Steric effect- Relative stability of trans and cis-2-butene.</p> <p><b>Mechanisms of Organic Reactions</b></p> <p>Notations used to represent electron movements and directions of reactions- curly arrows, formal charges. Types of bonds breaking- homolytic and heterolytic. Types of reagents-Electrophiles, nucleophiles, nucleophilicity and basicity. Types of organic reactions- substitution, addition, elimination, rearrangement and pericyclic reactions, explanation with examples.</p> <p>Chemistry of Aliphatic hydrocarbons, Carbon-Carbon Sigma bonds</p> <p>Chemistry of alkanes: Formation of alkanes, Wurtz reaction, Wurtz-Fittig reaction, Free radical substitution, Halogenation- relative reactivity and selectivity</p> <p><b>Carbon-carbon pi bonds</b></p> <p>Formation of alkenes and alkynes by elimination reaction. Mechanism of E1, E2, E1cb reaction. Saytzeff and Hofmann eliminations. Addition of HBr to propene, Free radical addition of HBr to propene. Addition of halogens to alkenes-carbocation and halonium ion mechanism. Stereospecificity of halogen addition. Ozonolysis mechanism - ozonolysis of propene. Addition of hydrogen halides to alkenes, mechanism, regioselectivity and relative rates of addition. Hydrogenation, hydration, hydroxylation and epoxidation of alkenes, explanation with examples, 1,2 and 1,4- addition reactions in conjugated dienes. Diels-Alder reaction, Allylic and benzylic bromination and mechanism in propene, 1-butene, 1-toluene and ethylbenzene.</p> |           |
| <b>Unit – 4</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           | <b>14</b> |
| <p>Nucleophilic substitution at saturated carbon. Mechanism of <math>S_N^1</math> and <math>S_N^2</math> reactions with suitable examples. Energy profile diagrams, Stereochemistry and factors effecting <math>S_N^1</math> and <math>S_N^2</math> reactions.</p> <p>Aromatic Electrophilic substitution reactions, Mechanisms, <math>\sigma</math> and <math>\pi</math> complexes, Halogenation, Nitration, Sulphonation, Friedel Crafts alkylation and acylation with their mechanism. Activating and deactivating groups. Orientation influence, Ortho-para ratio.</p> <p>Aromatic nucleophilic substitution reaction: <math>S_N^Ar</math> and Benzyne mechanism with suitable examples</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |           |

### Text Books

1. Vogel's Textbook of Quantitative Chemical Analysis, J. Mendham, R.C. Denney, J.D.Barnes and M.J.K. Thomas, 6<sup>th</sup> edition, Third Indian Reprint, Pearson Education Pvt.Ltd.(2007).
2. Fundamentals of Analytical Chemistry, D.A. Skoog, D.M. West, Holler and Crouch, 8<sup>th</sup> edition, Saunders College Publishing, New York (2005).
3. Analytical Chemistry, G.D. Christian, 6<sup>th</sup> edition, Wiley-India (2007).
4. Practical Volumetric Analysis, Peter A C McPherson, Royal Society of Chemistry, Cambridge, UK (2015).
5. Morrison, R. N. & Boyd, R. N. *Organic Chemistry*, Dorling Kindersley (India) Pvt. Ltd. (Pearson Education)
6. Finar, I. L. *Organic Chemistry (Volume I)*, Dorling Kindersley (India) Pvt. Ltd. (Pearson Education)
7. McMurry, J. E. *Fundamentals of Organic Chemistry*, 7<sup>th</sup> Ed. Cengage Learning India Edition, 2013
8. Organic Reaction mechanism by V. K. Ahluwalia and K. Parashar (Narosa Publishers).
9. Organic Chemistry by S. M. Mukherji, S. P. Singh and R. K. Kapoor. (Narosa Publishers)
10. A Guide book to mechanism in Organic Chemistry by Peter sykes. Pearson.

### References

#### Pedagogy

| Formative Assessment      |                    |
|---------------------------|--------------------|
| Assessment Occasion/ type | Weightage in Marks |
| Internal Test             | 40                 |

|              |            |
|--------------|------------|
| Sem End Exam | 60         |
| <b>Total</b> | <b>100</b> |

### Content of Practical Course 1: List of Experiments to be conducted

#### PART-A Analytical Chemistry

1. Calibration of glassware, pipette, burette and volumetric flask.
2. Determination of sodium carbonate and sodium bicarbonate in a mixture.
3. Determination of alkali present in soaps/detergents
4. Determination of iron(II) using potassium dichromate
5. Determination of oxalic acid using potassium permanganate solution
6. Standardization of EDTA solution and determination of hardness of water
7. Standardization of silver nitrate and determination of chloride in a water sample (demonstration)
8. Determination of alkali content in antacids

#### PART-B Organic Chemistry

1. Selection of suitable solvents for Purification/Crystallization of organic compounds.
2. Preparation of acetanilide from aniline using Zn/acetic acid (Green method).
3. Synthesis of p-nitro acetanilide from acetanilide using nitrating mixture.
4. Bromination of acetanilide (i) Conventional method and/or (ii) with ceric ammonium nitrate and potassium bromide (Green method).
5. Hydrolysis of methyl m-nitrobenzoate to m-nitrobenzoic acid (Conventional method)
6. Synthesis of diazoaminobenzene from aniline (conventional method).
7. Preparation of dibenzalacetone (Green method).
8. Diels Alder reaction between furan and maleic acid (Green method).

### BSc Semester 1 – Chemistry (Hons) with Organic Specialization

#### Title of the Course: OE-1: CHEMISTRY IN DAILY LIFE

| Number of Theory Credits                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          | Number of lecture hours/ semester | Number of practical Credits | Number of practical hours/ semesters |
|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------|-----------------------------|--------------------------------------|
| 3                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 | 42                                | -                           | 42                                   |
| <b>Content of Theory Course 1</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |                                   |                             | <b>42 Hrs</b>                        |
| <b>Unit – 1</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |                                   |                             | <b>14</b>                            |
| <b>Dairy Products:</b> Composition of milk and milk products. Analysis of fat content, minerals in milk and butter. Estimation of added water in milk. Beverages: Analysis of caffeine in coffee and tea, detection of chicory in coffee, chloral hydrate in toddy, determination of methyl alcohol in alcoholic beverages.<br><b>Food additives, adulterants, and contaminants-</b> Food preservatives like benzoates, propionates, sorbates, disulphites. Artificial sweeteners: Aspartame, saccharin, dulcin, sucralose, and sodium cyclamate. Flavors: Vanillin, alkyl esters (fruit flavors), and monosodium |                                   |                             |                                      |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |                                   |                             |                                      |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |                                   |                             |                                      |



|                                                                                                                                                                                                                                                                                                                        |           |
|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------|
| glutamate.<br><b>Artificial food colorants:</b> Coal tar dyes and non-permitted colors and metallic salts. Analysis of pesticide residues in food.                                                                                                                                                                     |           |
| <b>Unit – 2</b>                                                                                                                                                                                                                                                                                                        | <b>14</b> |
| <b>Vitamins:</b> Classification and Nomenclature. Sources, deficiency diseases, and structures of Vitamin A1, Vitamin B1, Vitamin C, Vitamin D, Vitamin E & Vitamin K1.                                                                                                                                                |           |
| <b>Oils and fats:</b> Composition of edible oils, detection of purity, rancidity of fats and oil. Tests for adulterants like argemone oil and mineral oils. Halphen test.                                                                                                                                              |           |
| <b>Soaps &amp; Detergents:</b> Definition, classification, manufacturing of soaps and detergents, composition and uses                                                                                                                                                                                                 |           |
| <b>Unit – 3</b>                                                                                                                                                                                                                                                                                                        | <b>14</b> |
| <b>Chemical and Renewable Energy Sources:</b><br>principles and applications of primary & secondary batteries and fuel cells. Basics of solar energy, future energy storer.                                                                                                                                            |           |
| <b>Polymers:</b> Basic concept of polymers, classification and characteristics of polymers. Applications of polymers as plastics in electronic, automobile components, medical fields, and aerospace materials. Problems of plastic waste management. Strategies for the development of environment-friendly polymers. |           |

## Text Books

1. B. K. Sharma: Introduction to Industrial Chemistry, Goel Publishing, Meerut (1998)
2. Medicinal Chemistry- Ashtoush Kar.
3. Analysis of Foods – H.E. Cox: 13.
4. Chemical Analysis of Foods – H.E. Cox and Pearson.
5. Foods: Facts and Principles. N. Shakuntala Many and S. Swamy, 4<sup>th</sup>ed. New Age International (1998)
6. Physical Chemistry – P I Atkins and J. de Paula – 7<sup>th</sup>Ed. 2002, Oxford University Press.
7. Handbook on Fertilizer Technology by Swaminathan and Goswamy, 6<sup>th</sup> ed. 2001, FAI.
8. Organic Chemistry by I. L. Finar, Vol. 1 & 2. 9. Polymer Science and Technology, J. R. Fried (Prentice Hall).

## References

## Pedagogy

| Formative Assessment      |                    |
|---------------------------|--------------------|
| Assessment Occasion/ type | Weightage in Marks |
| Internal Test             | 40                 |
| Sem End Exam              | 60                 |
| <b>Total</b>              | <b>100</b>         |

**BSc Semester 2 – Chemistry (Hons) with Organic Specialization**  
**Title of the Course: DSC – 2: INORGANIC AND PHYSICAL CHEMISTRY - I**

| Number of Theory Credits                                                                                                                                                                                                                                                                                                                                             | Number of lecture hours/semester | Number of practical Credits | Number of practical hours/ semesters |
|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------|-----------------------------|--------------------------------------|
| 4                                                                                                                                                                                                                                                                                                                                                                    | 56                               | 2                           | 56                                   |
| <b>Content of Theory Course 2</b>                                                                                                                                                                                                                                                                                                                                    |                                  |                             | <b>56Hrs</b>                         |
| <b>Unit – 1</b>                                                                                                                                                                                                                                                                                                                                                      |                                  |                             | <b>14</b>                            |
| Bohr's theory, its limitations and atomic spectrum of hydrogen atom. Wave mechanics: de Broglie equation, Heisenberg's Uncertainty Principle and its significance, Schrödinger's wave equation, significance of $\psi$ and $\psi^2$ . Quantum numbers and their significance.                                                                                        |                                  |                             |                                      |
| Normalized and orthogonal wave functions. Sign of wave functions. Radial and angular wave functions for hydrogen atom. Radial and angular distribution curves. Shapes of s, p, d and f orbitals. Contour boundary and probability diagrams.                                                                                                                          |                                  |                             |                                      |
| Pauli's Exclusion Principle, Hund's rule of maximum multiplicity, Aufbau's principle and its limitations- Electronic configurations of the elements (Z=1-30), effective nuclear charge, shielding/screening effect, Slater's rules. Variation of effective nuclear charge in Periodic Table.                                                                         |                                  |                             |                                      |
| <b>Unit – 2</b>                                                                                                                                                                                                                                                                                                                                                      |                                  |                             | <b>14</b>                            |
| s, p, d and f-block elements, the long form of periodic table. Detailed discussion of the following properties of the elements, with reference to s and p-block elements:                                                                                                                                                                                            |                                  |                             |                                      |
| (a) Atomic radii (van der Waals)                                                                                                                                                                                                                                                                                                                                     |                                  |                             |                                      |
| (b) Ionic and crystal radii.                                                                                                                                                                                                                                                                                                                                         |                                  |                             |                                      |
| (c) Covalent radii                                                                                                                                                                                                                                                                                                                                                   |                                  |                             |                                      |
| (d) Ionization enthalpy, successive ionization enthalpies and factors affecting ionization energy. Applications of ionization enthalpy.                                                                                                                                                                                                                              |                                  |                             |                                      |
| (e) Electron gain enthalpy, trends of electron gain enthalpy.                                                                                                                                                                                                                                                                                                        |                                  |                             |                                      |
| (f) Electronegativity, Pauling's/ Mulliken's/ Allred Rachow's/ and Mulliken-Jaffé's electronegativity scales. Variation of electronegativity with bond order, partial charge, hybridization, group electronegativity.                                                                                                                                                |                                  |                             |                                      |
| Trends in the chemistry of the compounds of groups 13 to 17 (hydrides, carbides, oxides and halides) are to be discussed.                                                                                                                                                                                                                                            |                                  |                             |                                      |
| <b>Unit – 3</b>                                                                                                                                                                                                                                                                                                                                                      |                                  |                             | <b>14</b>                            |
| <b><u>Gaseous State</u></b>                                                                                                                                                                                                                                                                                                                                          |                                  |                             |                                      |
| Elementary aspects of kinetic theory of gases, Ideal and real gases. Boyle temperature (derivation not required), Molecular velocity, collision frequency, collision diameter, Collision cross section, collision number and mean free path and coefficient of viscosity, calculation of $\sigma$ and $\eta$ , variation of viscosity with temperature and pressure. |                                  |                             |                                      |
| Maxwell's Boltzmann distribution law of molecular velocities (Most probable, average and root mean square velocities). Relation between RMS, average and most probable velocity and average kinetic energies. (Mathematical derivation not required), law of equipartition of energy.                                                                                |                                  |                             |                                      |
| Behaviour of real gases: Deviation from ideal gas behaviour. Compressibility factor (Z) and its variation with pressure for different gases. Causes of deviation from ideal behaviour,                                                                                                                                                                               |                                  |                             |                                      |

|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |           |
|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------|
| <p>vander Waals equation of state (No derivation) and application in explaining real gas behaviour. Critical phenomena - Andrews isotherms of CO<sub>2</sub>, critical constants and their calculation from van der Waals equation, Continuity of states, Law of corresponding states. Numerical problems.</p> <p><b>Liquid State</b></p> <p><b>Surface Tension:</b> Definition and its determination using stalagmometer, effect of temperature and solute on surface tension</p> <p><b>Viscosity:</b> Definition, Coefficient of viscosity. Determination of viscosity of a liquid using Oswald viscometer. Effect of temperature, size, weight, shape of molecules and intermolecular forces.</p> <p><b>Refraction:</b> Specific and molar refraction- definition and advantages. Determination of refractive index by Abbe's Refractometer.</p> <p>Additive and constitutive properties.</p> <p><b>Parachor:</b> Definition, Atomic and structure parachor, Elucidation of structure of benzene and benzoquinone. Viscosity and molecular structure. Molar refraction and chemical constitution.</p> <p>Numerical Problems.</p>                                                                                                                                                                                                                                                                                      |           |
| <b>Unit – 4</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          | <b>14</b> |
| <p><b>Liquid Crystals</b></p> <p>Explanation, classification with examples- Smectic, nematic, cholesteric, disc shaped and polymeric. Structures of nematic and cholesteric phases-molecular arrangements in nematic and cholesteric liquid crystals. Applications of liquid crystals in LCDs and thermal sensing.</p> <p><b>Solids</b></p> <p><b>Forms of solids:</b> Unit cell and space lattice, anisotropy of crystals, size and shape of crystals,</p> <p>Laws of Crystallography: Law of constancy of interfacial angles, Law of rational indices, Law of symmetry (Symmetry elements), Crystal systems, Bravais lattice types and identification of lattice planes.</p> <p>Miller indices and its calculation, X-Ray diffraction by crystals: Bragg's law and derivation of Bragg's equation, Single crystal and powder diffraction methods. Defects in crystals, glasses and liquid crystals. Numerical problems.</p> <p><b>Distribution Law</b></p> <p>Nernst Distribution Law - Statement and its derivation. Distribution constant, factors affecting distribution constant, validity of Distribution Law, Modification of distribution law when molecules undergo a) Association b) Dissociation. Application of Distribution Law in Solvent extraction. Derivation for simple and multiple extraction. Principles of distribution law in Parkes Process of desilverisation of lead. Numerical Problems.</p> |           |

### Text Books

1. Concise Inorganic Chemistry: J D Lee, 4<sup>th</sup> Edn, Wiley, (2021)
2. Fundamentals Concepts of Inorganic Chemistry, Vol 1 and 2, 2<sup>nd</sup> Edition, Asim K Das, CBS Publishers and Distributors, (2013)
3. Basic Inorganic Chemistry, F A Cotton, G Wilkinson and P. L. Gaus, 3<sup>rd</sup> Edition. Wiley. India
4. Inorganic Chemistry, 2<sup>nd</sup> Edn. Catherine E. Housecroft and A.G. Sharpe, Pearson Prentice Hall (2005)
5. Atkins Physical Chemistry. 8<sup>th</sup> Edition. Peter Atkins & Julio De Paula Oxford University Press.
6. Physical Chemistry by Samuel Glasstone, ELBS (1982).
7. A Text book of Physical Chemistry, A S Negi & S C Anand, New Age International Publishers (2007).
8. Principles of Physical Chemistry, Puri, Sharma & Pathania, Vishal Publishing Co.

9. A Text Book of Physical Chemistry P.L.Soni , O.P. Dharmarhaand and U.N.Dash, Sultan Chand and Sons.
10. Advanced Physical Chemistry, Gurdeep Raj, Goel Publishing House (2018)

## References

| Formative Assessment      |                    |
|---------------------------|--------------------|
| Assessment Occasion/ type | Weightage in Marks |
| Internal Test             | 40                 |
| Sem End Exam              | 60                 |
| <b>Total</b>              | <b>100</b>         |

## Content of Practical Course 2: List of Experiments to be conducted

### PART-A Inorganic Chemistry

#### TITRIMETRY

1. Determination of carbonate and hydroxide present in a mixture.
2. Determination of oxalic acid and sodium oxalate in a given mixture using standard  $\text{KMnO}_4/\text{NaOH}$  solution
3. Standardization of potassium permanganate solution and determination of nitrite in a water sample
4. Determination of chlorine in bleaching powder using iodometric method.

#### GRAVIMETRY

1. Determination of  $\text{Ba}^{2+}$  as  $\text{BaSO}_4$
2. Determination of  $\text{Cu}^{2+}$  as  $\text{CuSCN}$
3. Determination of  $\text{Fe}^{2+}$  as  $\text{Fe}_2\text{O}_3$
4. Determination of  $\text{Ni}^{2+}$  as  $\text{Ni}(\text{DMG})_2$  complex

### PART-B Physical Chemistry

1. Safety Practices in the Chemistry Laboratory, Knowledge about common toxic chemicals and safety measures in their handling, cleaning and drying of glassware's
2. Determination of density using specific gravity bottle and viscosity of liquids using Ostwald's viscometer (Ethyl acetate, Toluene, Chloroform, Chlorobenzene or any other non-hazardous liquids)
3. Study of the variation of viscosity of sucrose solution with the concentration of a solute
4. Determination of the density using specific gravity bottle and surface tension of liquids using Stalagmometer (Ethyl acetate, Toluene, Chlorobenzene, any other non-hazardous liquids)
5. Study of variation of surface tension of detergent solution with concentration.
6. Determination of specific and molar refraction by Abbes Refractometer. (Ethyl acetate, Methyl acetate, Ethylene Chloride)
7. Determination of the composition of liquid mixture by refractometry. (Toluene & Alcohol, Water & Sucrose)
8. Determination of partition/distribution coefficient - i) Acetic acid in water and

cyclohexane. ii) Acetic acid in Water and Butanol. iii) Benzoic acid in water and toluene.

**BSc Semester 2 – Chemistry (Hons) with Organic Specialization**  
**Title of the Course: OE – 2: Molecules of Life**

| Number of Theory Credits                                                                                                                                                                                                                                                                                                                                                      | Number of lecture hours/semester | Number of practical Credits | Number of practical hours/ semesters |
|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------|-----------------------------|--------------------------------------|
| 3                                                                                                                                                                                                                                                                                                                                                                             | 42                               | -                           | 42                                   |
| <b>Content of Theory Course 2</b>                                                                                                                                                                                                                                                                                                                                             |                                  |                             | <b>42 Hrs</b>                        |
| <b>Unit – 1</b>                                                                                                                                                                                                                                                                                                                                                               |                                  |                             | <b>14</b>                            |
| <b>Carbohydrates</b>                                                                                                                                                                                                                                                                                                                                                          |                                  |                             |                                      |
| Classification of carbohydrates, reducing and non-reducing sugars, General properties of glucose and fructose, their open chain structures. Epimers, mutarotation and anomers.                                                                                                                                                                                                |                                  |                             |                                      |
| Linkage between monosaccharides, structure of disaccharides (sucrose, maltose, lactose) and polysaccharides (starch and cellulose) excluding their structure elucidation.                                                                                                                                                                                                     |                                  |                             |                                      |
| <b>Amino Acids, Peptides and Proteins</b>                                                                                                                                                                                                                                                                                                                                     |                                  |                             |                                      |
| Classification of amino acids, Zwitterion structure and Isoelectric point. Overview of Primary, Secondary, Tertiary and Quaternary structure of proteins. Determination of primary structure of peptides.                                                                                                                                                                     |                                  |                             |                                      |
| <b>Unit – 2</b>                                                                                                                                                                                                                                                                                                                                                               |                                  |                             | <b>14</b>                            |
| <b>Enzymes and correlation with drug action</b>                                                                                                                                                                                                                                                                                                                               |                                  |                             |                                      |
| Mechanism of enzyme action, factors affecting enzyme action, Co-enzymes and cofactors and their role in biological reactions, Specificity of enzyme action (including stereospecificity),                                                                                                                                                                                     |                                  |                             |                                      |
| Enzyme inhibitors and their importance, phenomenon of inhibition (Competitive and Non competitive inhibition including allosteric inhibition).                                                                                                                                                                                                                                |                                  |                             |                                      |
| <b>Drug action</b> -receptor theory. Structure–activity relationships of drug molecules, binding role of –OH group, -NH <sub>2</sub> group, double bond and aromatic ring                                                                                                                                                                                                     |                                  |                             |                                      |
| <b>Lipids</b>                                                                                                                                                                                                                                                                                                                                                                 |                                  |                             |                                      |
| Introduction to lipids, classification. Biological importance of triglycerides, phospholipids, glycolipids, and steroids (cholesterol).                                                                                                                                                                                                                                       |                                  |                             |                                      |
| <b>Unit – 3</b>                                                                                                                                                                                                                                                                                                                                                               |                                  |                             | <b>14</b>                            |
| <b>Nucleic Acids</b>                                                                                                                                                                                                                                                                                                                                                          |                                  |                             |                                      |
| Components of nucleic acids: Adenine, guanine, thymine and cytosine (Structure only), other components of nucleic acids, Nucleosides and nucleotides ( <b>nomenclature</b> ), Structure of polynucleotides; Structure of DNA (Watson-Crick model) and RNA ( <b>types of RNA</b> ), Genetic Code, Biological roles of DNA and RNA: Replication, Transcription and Translation. |                                  |                             |                                      |
| <b>Concept of Energy in Biosystems</b>                                                                                                                                                                                                                                                                                                                                        |                                  |                             |                                      |
| Calorific value of food. Standard caloric content of carbohydrates, proteins and fats. Oxidation of foodstuff (organic molecules) as a source of energy for cells. Introduction to                                                                                                                                                                                            |                                  |                             |                                      |

|                                                                                                                                                                                                                                                                                                                                                                                         |  |
|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--|
| Metabolism (catabolism, anabolism), ATP: the universal currency of cellular energy, ATP hydrolysis and free energy change. Conversion of food into energy. Outline of catabolic pathways of Carbohydrate- Glycolysis, Fermentation, Krebs Cycle. Overview of catabolic pathways of Fats and Proteins. Interrelationships in the metabolic pathways of Proteins, Fats and Carbohydrates. |  |
|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--|

### Text Books

1. Morrison, R. T. & Boyd, R. N. *Organic Chemistry*, Dorling Kindersley (India) Pvt. Ltd. (Pearson Education).
2. Finar, I. L. *Organic Chemistry (Volume 1)*, Dorling Kindersley (India) Pvt. Ltd. (Pearson Education).
3. Finar, I. L. *Organic Chemistry (Volume 2)*, Dorling Kindersley (India) Pvt. Ltd. (Pearson Education).
4. Nelson, D. L. & Cox, M. M. *Lehninger's Principles of Biochemistry 7th Ed.*,
5. W. H. Freeman. Berg, J.M., Tymoczko, J.L. & Stryer, L. *Biochemistry*, , 2002.

### References

| Formative Assessment      |                    |
|---------------------------|--------------------|
| Assessment Occasion/ type | Weightage in Marks |
| Internal Test             | 40                 |
| Sem End Exam              | 60                 |
| <b>Total</b>              | <b>100</b>         |

Sd/-

# MANGALORE UNIVERSITY

## Choice Based Credit System Semester Scheme with Multiple Entry and Exit Options in the UG Programmes under NEP 2020

### Bachelor of Computer Applications (BCA) Degree Programme

2021-2022 Onwards

### I SEMESTER BCA

## BLOWN UP SYLLABUS & PRACTICAL LISTS

|                         |                                                |
|-------------------------|------------------------------------------------|
| Course Code: CAC01      | Course Title: <b>Fundamentals of Computers</b> |
| Course Credits: 03      | Hours/Week: 03                                 |
| Total Contact Hours: 42 | Formative Assessment Marks: 40                 |
| Exam Marks: 60          | Exam Duration: 03                              |

| Topics                                                                                                                                                                                                                                                       | Chapter Number       | Section                                                                                 |
|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------|-----------------------------------------------------------------------------------------|
| <b>Unit-1 [12 Hours]</b>                                                                                                                                                                                                                                     |                      |                                                                                         |
| <b>Computer Basics:</b> Introduction, Characteristics computers, Evolution computers, Generations of computers, Classification of computers, the computer system, Application of computers.                                                                  | Book 1<br>Chapter 1  | 1.1 to 1.6                                                                              |
| <b>Computer Architecture:</b> Introduction, Central processing unit- ALU, Registers, Control unit, system bus, main memory unit, cache memory                                                                                                                | Book 1<br>Chapter 2  | 2.1, 2.2                                                                                |
| <b>Input devices:</b> Introduction, Types of input devices, Keyboard, Mouse, Track ball, Joystick light pen, Touch screen and track pad. Speech recognition, digital camera, webcam, Scanners                                                                | Book 1<br>Chapter 4  | 4.1, 4.2.1, 4.2.2, 4.2.4, 4.2.5, 4.2.6<br>(Excluding the working of devices)            |
| <b>Output devices:</b> Types of output, Classification of output devices, Printers – Dot matrix, Ink-jet, Laser, Hydra, Plotter, Monitor – CRT, LCD, Differences between LCD and CRT                                                                         | Book 1<br>Chapter 4  | 4.3, 4.3.1, 4.3.2, 4.3.4,<br>(Excluding the working of devices and Daisy wheel Printer) |
| <b>Unit- 2 [10 Hours]</b>                                                                                                                                                                                                                                    |                      |                                                                                         |
| <b>Computer software:</b> Introduction, software definition, relationship between software and hardware, software categories                                                                                                                                 | Book 1<br>Chapter 11 | 11.1, 11.2, 11.3                                                                        |
| <b>Computer programming languages:</b> Introduction, Developing a program, Program development cycle, Types of programming languages, generation of programming languages, Features of a good programming language.                                          | Book 1<br>Chapter 10 | 10.1, 10.9, 10.10, 10.11                                                                |
| <b>Algorithm:</b> Steps involved in algorithm development, Algorithms for simple problems (To find largest of three numbers, factorial of a number, check for prime number, check for palindrome, Count number of odd, even and zeros in a list of integers) | Book 1<br>Chapter 10 | 10.2                                                                                    |
| <b>Flowcharts:</b> Definition, advantages, Symbols used in flow charts. Flowcharts for simple problems mentioned in algorithms. Pseudocode, Pseudocode Guidelines, Limitations of Pseudocode.                                                                | Book 1<br>Chapter 10 | 10.3, 10.5                                                                              |

| <b>Unit – 3 [10 Hours]</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |                                  |                                                |
|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------|------------------------------------------------|
| <b>Digital Computers and Digital System:</b> Introduction to Number System, Decimal number, Binary number, Octal and Hexadecimal numbers, Number base conversion, Complements, Binary codes, Binary arithmetic, Addition, Subtraction in the 1's and 2's complements system, Subtraction in the 9's and 10's complement system.                                                                                                                                                                                                                                                                                                                                                               | Book 2<br>Chapter 1              | 1.2, 1.3, 1.4, 1.5                             |
| <b>Boolean Algebra:</b> Basic definitions, Axiomatic definition of Boolean algebra, Basic theorems and properties of Boolean algebra, Venn diagram.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           | Book 2<br>Chapter 2              | 2.1, 2.2, 2.3                                  |
| <b>Unit – 4 [10 Hours]</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |                                  |                                                |
| <b>Digital logical gate:</b> Boolean functions, Canonical and Standard forms, Minterms, Maxterms, other logic operations, Digital logic gates, Universal gates.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               | Book 2<br>Chapter 2<br>Chapter 4 | 2.4, 2.5, 2.6, 2.7<br>(Excluding 2.7.1), 4.7.1 |
| <b>Simplification of Boolean function:</b> The map method, Two and three variable maps, Four-variable maps, Product of Sums simplification, Don't care conditions,                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            | Book 2<br>Chapter 3              | 3.1, 3.2, 3.3, 3.5, 3.8                        |
| <b>Text Book:</b> <ol style="list-style-type: none"> <li>1. ITL Education Solution Limited, Introduction to Information Technology, Second Edition, Pearson</li> <li>2. M. Morris Mano, Digital Logic and Computer design, PHI, 2015</li> </ol><br><b>Reference Books</b> <ol style="list-style-type: none"> <li>1. Pradeep K. Sinha and Priti Sinha, Computer Fundamentals, Sixth Edition, BPB Publication.</li> <li>2. David Riley and Kenny Hunt, Computational thinking for modern solver, Chapman &amp; Hall/CRC.</li> <li>3. J. Glenn Brook shear, Computer Science: An Overview, Twelfth Edition, Addison-Wesley</li> <li>4. R.G. Dromey, How to solve it by Computer, PHI.</li> </ol> |                                  |                                                |



|                         |                                       |
|-------------------------|---------------------------------------|
| Course Code: CAC02      | Course Title: <b>Programming in C</b> |
| Course Credits: 03      | Hours/Week: 03                        |
| Total Contact Hours: 42 | Formative Assessment Marks: 40        |
| Exam Marks: 60          | Exam Duration: 03                     |

| <b>Contents</b>                                                                                                                                                                                                                                                                                                                                                                               | <b>Chapter</b> |
|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------|
| <b>Unit – 1 [12 Hours]</b>                                                                                                                                                                                                                                                                                                                                                                    |                |
| <b>Overview of C :</b> History of C , Importance of C Program, Basic structure of a C-program, Execution of C Program.                                                                                                                                                                                                                                                                        | 1              |
| <b>C Programming Basic Concepts:</b> Character set, C token, Keywords and identifiers, Constants, Variables, data types, Declaration of variables, assigning values to variables, defining symbolic constants.                                                                                                                                                                                | 2              |
| <b>Input and output with C:</b> Formatted I/O functions - <i>printf</i> and <i>scanf</i> , control stings and escape sequences, output specifications with <i>printf</i> functions; Unformatted I/O functions to read and display single character and a string - <i>getchar</i> , <i>putchar</i> , <i>gets</i> and <i>puts</i> functions.                                                    | 4              |
| <b>Unit – 2 [10 Hours]</b>                                                                                                                                                                                                                                                                                                                                                                    |                |
| <b>Operators &amp; Expressions:</b> Arithmetic operators; Relational operators; Logical operators; Assignment operators; Increment & Decrement operators; Bitwise operators; Conditional operator; Special operators; Operator Precedence and Associativity; Evaluation of arithmetic expressions; Type conversion.                                                                           | 3              |
| <b>Control Structures:</b> Decision Making and Branching -Decision making with if statement, simple if statement, the if else statement, nesting of if ... else statements, the else if ladder, the switch statement, the ?: operator, the go to statement. Decision making and looping - The while statement, the do statement, for statement, nested loops, exit, break, jumps in loops.    | 5,6            |
| <b>Unit – 3 [10 Hours]</b>                                                                                                                                                                                                                                                                                                                                                                    |                |
| <b>Derived data types in C:</b> Arrays - declaration, initialization and access of one-dimensional and two-dimensional arrays. programs using one- and two-dimensional arrays, sorting and searching arrays.                                                                                                                                                                                  | 7              |
| <b>Handling of Strings:</b> Declaring and initializing string variables, reading strings from terminal, writing strings to screen, Arithmetic operations on characters, String handling functions - <i>strlen</i> , <i>strcmp</i> , <i>strcpy</i> , <i>strchr</i> and <i>strcat</i> ; Character handling functions - <i>tolower</i> , <i>toupper</i> , <i>isalpha</i> , <i>isnumeric</i> etc. | 8              |
| <b>Pointers:</b> Understanding pointers, accessing the address of a variable, declaring and initializing pointers, accessing a variable through its pointer, pointer expression, pointer increments and scale factor, pointers and arrays, pointer and strings.                                                                                                                               | 11             |
| <b>Unit – 4 [10 Hours]</b>                                                                                                                                                                                                                                                                                                                                                                    |                |
| <b>User-defined functions:</b> Need for user-defined functions, Declaring, defining and calling C functions, return values and their types, Categories of functions: With/without arguments, with/without return values. Nesting of functions.                                                                                                                                                | 9              |
| <b>Recursion:</b> Definition, example programs.                                                                                                                                                                                                                                                                                                                                               |                |
| <b>Structures and unions:</b> Structure definition, giving values to members, structure initialization, comparison of structure variables, arrays of structures, arrays within structures, Structure and functions, structures within structures. Unions                                                                                                                                      | 10             |

**Text Book:**

1. E. Balagurusamy, Programming in ANSI C, 5/6/7th Edition, Tata McGraw Hill

**Reference Books:**

1. Herbert Schildt, C: The Complete Reference, 4th Edition, (Osborne Complete Reference Series)
2. Brain W. Kernighan, C Programming Language, 2<sup>nd</sup> Edition, Prentice Hall Software
3. Kernighan & Ritchie: The C Programming Language, 2<sup>nd</sup> Edition, PHI
4. Kamthane, Programming with ANSI and TURBO C, Pearson Education
5. V. Rajaraman, Computer Programming in C, 2<sup>nd</sup> Edition, PHI
6. S. Byron Gottfried, Programming with C, 2<sup>nd</sup> Edition, TMH
7. Yashwant Kanitkar, Let us C, 15<sup>th</sup> Edition, BPB
8. P.B. Kottur, Computer Concepts and Programming in C, 23<sup>rd</sup> Edition, Sapna Book House

|                         |                                              |
|-------------------------|----------------------------------------------|
| Course Code: CAC03      | Course Title: <b>Mathematical Foundation</b> |
| Course Credits: 03      | Hours/Week: 03                               |
| Total Contact Hours: 42 | Formative Assessment Marks: 40               |
| Exam Marks: 60          | Exam Duration: 03                            |

| Contents                                                                                                                                                                                                                                                                                                                                                                                                                                                                          | Book     | Section/Subsections                                      |
|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------|----------------------------------------------------------|
| <b>Unit – 1 [12 Hours]</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                        |          |                                                          |
| <b>Logarithms:</b> Introduction, Laws of operations (Statements only), Illustrations 1(a), (P 193-195), 2, 3(i, ii, iii, v) Change of Base rule (statement only), Examples 2, 3, 4, 5, 7, 14 (P 195, 197-199, 204), 19(a) (P 206), Exercise(I) 1, 2, 3 5(a), 8(a(i, ii)) 11(a), (b), C(i), 17(a)(i, ii)                                                                                                                                                                           | <b>1</b> | 7.0<br>7.1<br>10.1<br>10.2                               |
| <b>Binomial Theorem:</b> Statement only (P 334), Example 1, 2(P 336), 5 Exercise (I)(i, ii) 2 (i) & (ii) (P 338) Positions of Terms Examples 5 (P 337), 7(a) & 7 (b) (P 339) Exercise (II)-6(i), 7 (P 350)                                                                                                                                                                                                                                                                        | <b>1</b> | 15.0<br>15.1<br>15.2                                     |
| <b>Analytical Geometry :</b> Introduction, Directed Line, Quadrants, Example 1 (P 555) , Coordinates of the midpoints, (statement and example) (P 556), Distance between two points (Only formula no proof), Section Formula, External Division, Coordinates of Centroid, Area of a Triangle (Only statements), Examples 2(a) & (b) (P 557), 3, 4, 7, 11(P 558, 559, 562, 565) Exercise I-1(i, ii), 3, 5, 9(i), 15 (a) and (b), 16(a) and (b) 21(a), 24 (i) & (ii)                | <b>1</b> | 15.4<br>15.5<br>15.6<br>15.7<br>15.8<br>15.9             |
| <b>Straight Line:</b> Slope or gradient of a straight line (formula Only), Different forms of equations of straight line (Statements- I, V, VII, IX), General equation of a straight Line (Statement Only), Example 18(P 579), Condition of Parallelism and perpendicularism (P 585, Only formula), Example 29(587) Exercise 2 (a, b), 3(b) (i), (ii) and (iii) (P 592), 13 (i, ii)                                                                                               | <b>1</b> | 15.13<br>15.14<br>15.15<br>15.16<br>15.22                |
| <b>Circle:</b> The equation of a Circle (only Formula, I and II), Illustration (P 597), General Equation of the Circle(Statement only), Finding centre and radius Example (37, 39) (P 601) Exercise (III): 5(i) (P 612), 6(a) Equation of tangent and normal (Statement only, P 605 and 606) Example 50                                                                                                                                                                           | <b>1</b> | 15.23<br>15.24<br>15.25<br>15.26                         |
| <b>Unit – 2 [10 Hours]</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                        |          |                                                          |
| <b>Trigonometry</b><br>Quadrants, Measurement of Angles (I, III), Circular measure, Example 2, Exercise 3 (a) i and ii, 4 (P 483), Trigonometric functions (definition only) , trigonometric Ratios, relation between trigonometric functions I II & III only formulae (P 487), Signs of Trigonometric functions, T-ratios of standard angles (Only table P 503), Example 25 (P 493), Exercise(II) 12 (a), (b), 13(d, e) (P 499) Exercise(III) 1 (i) (ii) (iii), 2 (a), 4(a), (b) | <b>1</b> | 14.1<br>14.2<br>14.3<br>14.4<br>14.5<br>14.6(Table only) |
| <b>Calculus</b><br>Limit of a function, definition (P 633), Some Important Limits(I, II III IV), Example 3, 4 (P 635) Exercise 1(a), (c) (P 645)                                                                                                                                                                                                                                                                                                                                  | <b>1</b> | 16.5<br>16.7<br>16.8                                     |
| <b>Continuity of a Function</b> Statement only, Example 16(a) (b) (c) (d) (P 641, 642), Exercise 5, 6 (P 645)                                                                                                                                                                                                                                                                                                                                                                     | <b>1</b> |                                                          |
| <b>Differentiation</b><br>Definition, Derivative of a power function, derivative of a constant with any function, derivative of sum of functions, derivative of product of two                                                                                                                                                                                                                                                                                                    | <b>1</b> | 17.1<br>17.3 to 17.7                                     |

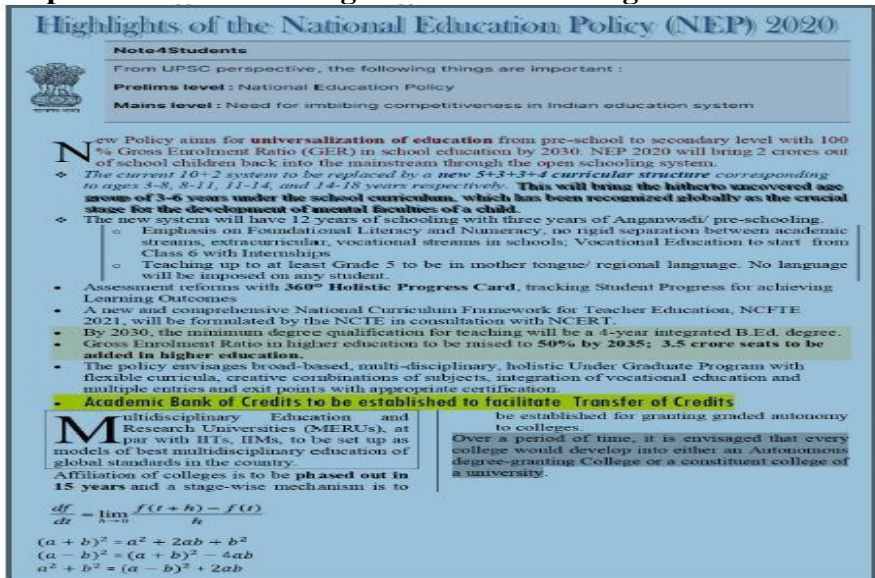
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |   |                                                                                                                             |
|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---|-----------------------------------------------------------------------------------------------------------------------------|
| function, derivative of the quotient of the two functions (Only statements), Illustration 1, 2 and 3,4 (P 652, 653), Illustrations 1, 2 (P 656, 657) Exercise (I) 1 (a) (b), 2 (a), (b)<br><b>Integration</b><br>Definition (P 724), Indefinite Integrals, Rules of Integration, Some Standard Results (Formula Only) (I II & IX) Illustration 1, 2, 3,4,5 (P 727), Exercise 1, 2(i) &(ii) (P 730)<br>Definite Integrals (Definition P 757), Illustration 1,2,3,5 (P 758, 759), Exercise (VI) 4(i)                                                                                                                                                                                                                                                                                           | 1 | 18.1 to 18.3<br>18.10                                                                                                       |
| <b>Unit – 3 [10 Hours]</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |   |                                                                                                                             |
| <b>Matrix Algebra</b> Introduction, definition, types of matrices, Illustration, scalar multiplication of matrices, Illustrations, equality of matrices, Illustrations 1,2,3 Exercise (I) 1,2,3 matrix operations, Addition and subtraction, Example 1(P 803), Multiplication, Example 2,3,4,12,13 Exercise(II):1(i,ii,iii),2, 13 Transpose of a matrix, Example: 15, symmetric matrix, skew symmetric and orthogonal matrix (P 822,823), Exercise (III): 1(a), 2, 3 Determinants of a square matrix, determinants of order two, Example (P 824),17 , Determinant of order three, expansion of the determinants, minors of a matrix, co-factors of a matrix, Example:23, 24,25 Exercise (VI): 1,3 Adjoint of a square matrix, Rank of a matrix. Illustrations:1,2,3 Exercise (VIII):4(i, ii) | 1 | 20.1, 20.2<br>20.3, 20.4<br>20.5, 20.6<br>20.8, 20.10<br>20.11, 20.12<br>20.14<br>20.18<br>20.19<br>20.20<br>20.21<br>20.25 |
| echelon form of a matrix (Statement and example only) , normal form of a matrix (only statement), equivalence of matrices (only statement)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   | 3 | Page-371,373,375                                                                                                            |
| <b>Unit – 4 [10 Hours]</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |   |                                                                                                                             |
| <b>Inverse of a matrix</b> (using adjoint matrices –cofactor method), Example:27 Exercise (VII): 1, 2,4                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      | 1 | 20.22                                                                                                                       |
| <b>Characteristic equation of a matrix</b> (statement only), Cayley Hamilton theorem (Statement only), example 9.2.3- a,c,d Problem 9.1-1(a,c)(P 246)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        | 4 | 9.2.1<br>9.2.2                                                                                                              |
| <b>System of Linear equations</b> ,Example 30, 31Method of Reduction, Example 33 Exercise 2: 16, 17(i,ii,iii,iv,vi), 18,19 (only to solve system of equations using method of reduction)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     | 2 | <b>Ch-1</b><br>1.34<br>1.52                                                                                                 |
| <b>Cramer's rule</b> , Example 1, 3,6 Exercise 5 (P 399): 1 (a), (b), 5                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      | 3 | (P 395)                                                                                                                     |
| <b>Arithmetic and Geometric Progressions:</b><br><b>Arithmetic progression:</b> Definition, formula for nth term, sum to n terms, Arithmetic mean, Example 1, 2, 3,4,7,8,10,15 Exercise 1: 2, 4, 7,9<br><b>Geometric progression:</b> Definition, formula for nth term, sum to n terms, geometric mean, Example 1,2, 7,18,26,27,30 Exercise: 2,17,19                                                                                                                                                                                                                                                                                                                                                                                                                                         | 2 | <b>Ch-3</b><br>3.1-3.4<br>3.26-3.28                                                                                         |
| <b>Text Books:</b><br>1. C Sanchethi and V K Kapoor, Business Mathematics, Sulthan Chand & Sons Educational publishers, New Delhi, Eleventh Revised Edition<br>2. P. R. Vittal, Business Mathematics and Statistics, Margham Publications, Chennai,<br>3. PUNDIR & S.K. PUNDIR, A TEXT BOOK OF BCA MATHEMATICS-I, RIMPLE, A Pragatis Edition (IV).<br>4. B. S. Vatsa-Discrete Mathematics –New Age International Limited Publishers, New Delhi                                                                                                                                                                                                                                                                                                                                               |   |                                                                                                                             |

|                         |                                                 |
|-------------------------|-------------------------------------------------|
| Course Code: CAC01P     | Course Title: <b>Information Technology Lab</b> |
| Course Credits: 02      | Hours/Week: 04                                  |
| Total Contact Hours: 52 | Formative Assessment Marks: 25                  |
| Exam Marks: 25          | Exam Duration: 03                               |

### Practice Tasks

1. Identification of the peripherals of a computer, components in a CPU and their functions.
2. Assembling and disassembling the system hardware components of personal computer.
3. Basic Computer Hardware Trouble shooting.
4. LAN and WiFi Basics.
5. Operating System Installation – Windows OS, UNIX/LINUX, Dual Booting.
6. Activities using word processing, presentation and spreadsheet software
7. Tasks involving Internet Browsing

## REVISED PRACTICAL LIST I SEM BCA Information Technology Lab-CAC01P

| Sl. NO. | PROGRAM                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |
|---------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 1.      | <p><b>Prepare a document using different formatting tools</b></p>  <p><b>Highlights of the National Education Policy (NEP) 2020</b></p> <p><b>Note4Students</b></p> <p>From UPSC perspective, the following things are important :</p> <p><b>Prelims level :</b> National Education Policy</p> <p><b>Mains level :</b> Need for imbuing competitiveness in Indian education system</p> <p><b>New Policy aims for universalization of education</b> from pre-school to secondary level with 100% Gross Enrolment Ratio (GER) in school education by 2030. NEP 2020 will bring 2 crores out of school children back into the mainstream through the open schooling system.</p> <ul style="list-style-type: none"> <li>❖ The current 10+2 system to be replaced by a new 5+3+3+4 curricular structure corresponding to ages 3-8, 8-11, 11-14, and 14-18 years respectively. <b>This will bring the hitherto uncovered age groups of 3-6 years under the school curriculum, which has been recognized globally as the crucial stage for the development of mental faculties of a child.</b></li> <li>❖ The new system will have 12 years of schooling with three years of Anganwadi/ pre-schooling.       <ul style="list-style-type: none"> <li>o Emphasis on Foundational Literacy and Numeracy, no rigid separation between academic streams, extracurricular, vocational streams in schools; Vocational Education to start from Class 6 with Internships</li> <li>o Teaching up to at least Grade 5 to be in mother tongue/ regional language. No language will be imposed on any student.</li> </ul> </li> <li>▪ Assessment reforms with 360° Holistic Progress Card, tracking Student Progress for achieving Learning Outcomes</li> <li>▪ A new and comprehensive National Curriculum Framework for Teacher Education, NC-FTE 2021, will be formulated by the NC-FTE in consultation with NCERT.</li> <li>▪ By 2030, the minimum degree qualification for teaching will be a 4-year integrated B.Ed. degree.</li> <li>▪ Gross Enrolment Ratio in higher education to be raised to 50% by 2035; 3.5 crore seats to be added in higher education.</li> <li>▪ The policy envisages broad-based, multi-disciplinary, holistic Under Graduate Program with flexible curricula, creative combinations of subjects, integration of vocational education and multiple entries and exit points with appropriate certification</li> <li>▪ <b>Academic Bank of Credits to be established to facilitate Transfer of Credits</b></li> </ul> <p><b>M</b>ultidisciplinary Education and Research Universities (MERUs), at par with IITs, IIITs, to be set up as models of best multidisciplinary education of global standards in the country.</p> <p>Affiliation of colleges is to be <b>phased out in 15 years</b> and a stage-wise mechanism is to</p> <p>be established for granting graded autonomy to colleges.</p> <p>Over a period of time, it is envisaged that every college would develop into either an Autonomous degree-granting College or a constituent college of a university.</p> $\frac{df}{dt} = \lim_{h \rightarrow 0} \frac{f(t+h) - f(t)}{h}$ $(a+b)^2 = a^2 + 2ab + b^2$ $(a-b)^2 = (a+b)^2 - 4ab$ $a^2 + b^2 = (a-b)^2 + 2ab$ |

2.

Prepare a document using SmartArt and Shapes tools

To find the largest of three numbers

```

graph TD
    Start([Start]) --> Read[/READ A, B, C/]
    Read --> IsAB{Is A > B?}
    IsAB -- No --> IsBC{Is B > C?}
    IsAB -- Yes --> IsAC{Is A > C?}
    IsBC -- Yes --> PrintB[Print "B is the largest"]
    IsBC -- No --> PrintC[Print "C is the largest"]
    IsAC -- Yes --> PrintA[Print "A is the largest"]
    IsAC -- No --> PrintC
    PrintB --> Join(( ))
    PrintC --> Join
    PrintA --> Join
    Join --> Stop([Stop])

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Organization Chart – Administration Faridabad Division

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graph TD
    Comm[Commissioner Faridabad Division] --> DC[Deputy Commissioner Nuh]
    DC --> SDMN[SDM Nuh]
    DC --> SDMT[SDM Tauru]
    DC --> SDMF[SDM Ferozepur Jhirka]
    DC --> SDMP[SDM Punhana]
    SDMN --> TNS[Tehsil Nuh]
    SDMT --> TT[Tehsil Tauru]
    SDMF --> TFJ[Tehsil Ferozepur Jhirka]
    SDMF --> STN[Sub Tehsil Nagina]
    SDMP --> TP[Tehsil Punhana]

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3.

Prepare a document with table to store sales details of a company for different quarters and calculate total, average and find maximum, minimum sales value.

Page | 2

|                                 | <table><tr><th rowspan="2">Branch Code</th><th rowspan="2">Branch</th><th colspan="4">Sales in Quarters</th><th rowspan="2">Total</th><th rowspan="2">Avg</th></tr><tr><th>1</th><th>2</th><th>3</th><th>4</th></tr><tr><td>A101</td><td>Mangalore</td><td>354690</td><td>244610</td><td>383290</td><td>413670</td><td></td><td></td></tr><tr><td>A102</td><td>Udupi</td><td></td><td></td><td></td><td></td><td></td><td></td></tr><tr><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td></tr><tr><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td></tr><tr><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td></tr><tr><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td></tr><tr><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td></tr><tr><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td></tr><tr><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td></tr><tr><td colspan="2">Total (Across Branches)</td><td></td><td></td><td></td><td></td><td colspan="2" rowspan="4"></td></tr><tr><td colspan="2">Average (Across Branches)</td><td></td><td></td><td></td><td></td></tr><tr><td colspan="2">Highest Sales (Across Branches)</td><td></td><td></td><td></td><td></td></tr><tr><td colspan="2">Lowest Sales (Across Branches)</td><td></td><td></td><td></td><td></td></tr></table> | Branch Code   | Branch | Sales in Quarters |             |              |     | Total | Avg | 1     | 2   | 3  | 4   | A101 | Mangalore | 354690 | 244610 | 383290 | 413670 |  |  | A102 | Udupi       |  |  |         |  |  |  |  |  |  |           |  |  |  |  |  |  |          |  |  |  |  |  |  |        |  |  |  |  |  |  |          |  |  |  |  |  |     |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  | Total (Across Branches) |  |  |  |  |  |  |  | Average (Across Branches) |  |  |  |  |  | Highest Sales (Across Branches) |  |  |  |  |  | Lowest Sales (Across Branches) |  |  |  |  |  |
|---------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------|--------|-------------------|-------------|--------------|-----|-------|-----|-------|-----|----|-----|------|-----------|--------|--------|--------|--------|--|--|------|-------------|--|--|---------|--|--|--|--|--|--|-----------|--|--|--|--|--|--|----------|--|--|--|--|--|--|--------|--|--|--|--|--|--|----------|--|--|--|--|--|-----|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|-------------------------|--|--|--|--|--|--|--|---------------------------|--|--|--|--|--|---------------------------------|--|--|--|--|--|--------------------------------|--|--|--|--|--|
| Branch Code                     | Branch                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |               |        | Sales in Quarters |             |              |     |       |     | Total | Avg |    |     |      |           |        |        |        |        |  |  |      |             |  |  |         |  |  |  |  |  |  |           |  |  |  |  |  |  |          |  |  |  |  |  |  |        |  |  |  |  |  |  |          |  |  |  |  |  |     |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |                         |  |  |  |  |  |  |  |                           |  |  |  |  |  |                                 |  |  |  |  |  |                                |  |  |  |  |  |
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| A101                            | Mangalore                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 | 354690        | 244610 | 383290            | 413670      |              |     |       |     |       |     |    |     |      |           |        |        |        |        |  |  |      |             |  |  |         |  |  |  |  |  |  |           |  |  |  |  |  |  |          |  |  |  |  |  |  |        |  |  |  |  |  |  |          |  |  |  |  |  |     |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |                         |  |  |  |  |  |  |  |                           |  |  |  |  |  |                                 |  |  |  |  |  |                                |  |  |  |  |  |
| A102                            | Udupi                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |               |        |                   |             |              |     |       |     |       |     |    |     |      |           |        |        |        |        |  |  |      |             |  |  |         |  |  |  |  |  |  |           |  |  |  |  |  |  |          |  |  |  |  |  |  |        |  |  |  |  |  |  |          |  |  |  |  |  |     |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |                         |  |  |  |  |  |  |  |                           |  |  |  |  |  |                                 |  |  |  |  |  |                                |  |  |  |  |  |
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| Total (Across Branches)         |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |               |        |                   |             |              |     |       |     |       |     |    |     |      |           |        |        |        |        |  |  |      |             |  |  |         |  |  |  |  |  |  |           |  |  |  |  |  |  |          |  |  |  |  |  |  |        |  |  |  |  |  |  |          |  |  |  |  |  |     |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |                         |  |  |  |  |  |  |  |                           |  |  |  |  |  |                                 |  |  |  |  |  |                                |  |  |  |  |  |
| Average (Across Branches)       |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |               |        |                   |             |              |     |       |     |       |     |    |     |      |           |        |        |        |        |  |  |      |             |  |  |         |  |  |  |  |  |  |           |  |  |  |  |  |  |          |  |  |  |  |  |  |        |  |  |  |  |  |  |          |  |  |  |  |  |     |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |                         |  |  |  |  |  |  |  |                           |  |  |  |  |  |                                 |  |  |  |  |  |                                |  |  |  |  |  |
| Highest Sales (Across Branches) |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |               |        |                   |             |              |     |       |     |       |     |    |     |      |           |        |        |        |        |  |  |      |             |  |  |         |  |  |  |  |  |  |           |  |  |  |  |  |  |          |  |  |  |  |  |  |        |  |  |  |  |  |  |          |  |  |  |  |  |     |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |                         |  |  |  |  |  |  |  |                           |  |  |  |  |  |                                 |  |  |  |  |  |                                |  |  |  |  |  |
| Lowest Sales (Across Branches)  |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |               |        |                   |             |              |     |       |     |       |     |    |     |      |           |        |        |        |        |  |  |      |             |  |  |         |  |  |  |  |  |  |           |  |  |  |  |  |  |          |  |  |  |  |  |  |        |  |  |  |  |  |  |          |  |  |  |  |  |     |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |                         |  |  |  |  |  |  |  |                           |  |  |  |  |  |                                 |  |  |  |  |  |                                |  |  |  |  |  |
|                                 | <p style="text-align: center;"><b>TIME TABLE</b></p> <table><tr><th colspan="4">Class : I BCA</th><th colspan="4">Room No. 206</th></tr><tr><th>Day</th><th>I</th><th>II</th><th>III</th><th>IV</th><th></th><th>V</th><th>VI</th></tr><tr><td>Monday</td><td></td><td></td><td></td><td></td><td rowspan="6">LUNCH BREAK</td><td></td><td></td></tr><tr><td>Tuesday</td><td></td><td></td><td></td><td></td><td></td><td></td></tr><tr><td>Wednesday</td><td></td><td></td><td></td><td></td><td></td><td></td></tr><tr><td>Thursday</td><td></td><td></td><td></td><td></td><td></td><td></td></tr><tr><td>Friday</td><td></td><td></td><td></td><td></td><td></td><td></td></tr><tr><td>Saturday</td><td></td><td></td><td></td><td></td><td></td><td>***</td></tr></table>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            | Class : I BCA |        |                   |             | Room No. 206 |     |       |     | Day   | I   | II | III | IV   |           | V      | VI     | Monday |        |  |  |      | LUNCH BREAK |  |  | Tuesday |  |  |  |  |  |  | Wednesday |  |  |  |  |  |  | Thursday |  |  |  |  |  |  | Friday |  |  |  |  |  |  | Saturday |  |  |  |  |  | *** |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |                         |  |  |  |  |  |  |  |                           |  |  |  |  |  |                                 |  |  |  |  |  |                                |  |  |  |  |  |
| Class : I BCA                   |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |               |        | Room No. 206      |             |              |     |       |     |       |     |    |     |      |           |        |        |        |        |  |  |      |             |  |  |         |  |  |  |  |  |  |           |  |  |  |  |  |  |          |  |  |  |  |  |  |        |  |  |  |  |  |  |          |  |  |  |  |  |     |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |                         |  |  |  |  |  |  |  |                           |  |  |  |  |  |                                 |  |  |  |  |  |                                |  |  |  |  |  |
| Day                             | I                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         | II            | III    | IV                |             | V            | VI  |       |     |       |     |    |     |      |           |        |        |        |        |  |  |      |             |  |  |         |  |  |  |  |  |  |           |  |  |  |  |  |  |          |  |  |  |  |  |  |        |  |  |  |  |  |  |          |  |  |  |  |  |     |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |                         |  |  |  |  |  |  |  |                           |  |  |  |  |  |                                 |  |  |  |  |  |                                |  |  |  |  |  |
| Monday                          |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |               |        |                   | LUNCH BREAK |              |     |       |     |       |     |    |     |      |           |        |        |        |        |  |  |      |             |  |  |         |  |  |  |  |  |  |           |  |  |  |  |  |  |          |  |  |  |  |  |  |        |  |  |  |  |  |  |          |  |  |  |  |  |     |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |                         |  |  |  |  |  |  |  |                           |  |  |  |  |  |                                 |  |  |  |  |  |                                |  |  |  |  |  |
| Tuesday                         |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |               |        |                   |             |              |     |       |     |       |     |    |     |      |           |        |        |        |        |  |  |      |             |  |  |         |  |  |  |  |  |  |           |  |  |  |  |  |  |          |  |  |  |  |  |  |        |  |  |  |  |  |  |          |  |  |  |  |  |     |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |                         |  |  |  |  |  |  |  |                           |  |  |  |  |  |                                 |  |  |  |  |  |                                |  |  |  |  |  |
| Wednesday                       |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |               |        |                   |             |              |     |       |     |       |     |    |     |      |           |        |        |        |        |  |  |      |             |  |  |         |  |  |  |  |  |  |           |  |  |  |  |  |  |          |  |  |  |  |  |  |        |  |  |  |  |  |  |          |  |  |  |  |  |     |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |                         |  |  |  |  |  |  |  |                           |  |  |  |  |  |                                 |  |  |  |  |  |                                |  |  |  |  |  |
| Thursday                        |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |               |        |                   |             |              |     |       |     |       |     |    |     |      |           |        |        |        |        |  |  |      |             |  |  |         |  |  |  |  |  |  |           |  |  |  |  |  |  |          |  |  |  |  |  |  |        |  |  |  |  |  |  |          |  |  |  |  |  |     |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |                         |  |  |  |  |  |  |  |                           |  |  |  |  |  |                                 |  |  |  |  |  |                                |  |  |  |  |  |
| Friday                          |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |               |        |                   |             |              |     |       |     |       |     |    |     |      |           |        |        |        |        |  |  |      |             |  |  |         |  |  |  |  |  |  |           |  |  |  |  |  |  |          |  |  |  |  |  |  |        |  |  |  |  |  |  |          |  |  |  |  |  |     |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |                         |  |  |  |  |  |  |  |                           |  |  |  |  |  |                                 |  |  |  |  |  |                                |  |  |  |  |  |
| Saturday                        |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |               |        |                   |             |              | *** |       |     |       |     |    |     |      |           |        |        |        |        |  |  |      |             |  |  |         |  |  |  |  |  |  |           |  |  |  |  |  |  |          |  |  |  |  |  |  |        |  |  |  |  |  |  |          |  |  |  |  |  |     |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |                         |  |  |  |  |  |  |  |                           |  |  |  |  |  |                                 |  |  |  |  |  |                                |  |  |  |  |  |
| 4.                              | Prepare interview call letters for five candidates describing about the company and instructions about the interview. Use Mail merge feature.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |               |        |                   |             |              |     |       |     |       |     |    |     |      |           |        |        |        |        |  |  |      |             |  |  |         |  |  |  |  |  |  |           |  |  |  |  |  |  |          |  |  |  |  |  |  |        |  |  |  |  |  |  |          |  |  |  |  |  |     |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |                         |  |  |  |  |  |  |  |                           |  |  |  |  |  |                                 |  |  |  |  |  |                                |  |  |  |  |  |
| 1.                              | Create a presentation (minimum 5 slides) about your college. It should contain images, chart, Bulleted text, .....                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |               |        |                   |             |              |     |       |     |       |     |    |     |      |           |        |        |        |        |  |  |      |             |  |  |         |  |  |  |  |  |  |           |  |  |  |  |  |  |          |  |  |  |  |  |  |        |  |  |  |  |  |  |          |  |  |  |  |  |     |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |                         |  |  |  |  |  |  |  |                           |  |  |  |  |  |                                 |  |  |  |  |  |                                |  |  |  |  |  |
| 2.                              | Create a presentation (minimum 5 slides) to advertise a product. The slides should be displayed automatically in a loop. Make use of Transition and Animations.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |               |        |                   |             |              |     |       |     |       |     |    |     |      |           |        |        |        |        |  |  |      |             |  |  |         |  |  |  |  |  |  |           |  |  |  |  |  |  |          |  |  |  |  |  |  |        |  |  |  |  |  |  |          |  |  |  |  |  |     |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |                         |  |  |  |  |  |  |  |                           |  |  |  |  |  |                                 |  |  |  |  |  |                                |  |  |  |  |  |
| 3.                              | A simple quiz program. Use hyperlinks to move to another slide in the presentation to display the result and correct answer/wrong answer status. Use at least four questions.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |               |        |                   |             |              |     |       |     |       |     |    |     |      |           |        |        |        |        |  |  |      |             |  |  |         |  |  |  |  |  |  |           |  |  |  |  |  |  |          |  |  |  |  |  |  |        |  |  |  |  |  |  |          |  |  |  |  |  |     |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |                         |  |  |  |  |  |  |  |                           |  |  |  |  |  |                                 |  |  |  |  |  |                                |  |  |  |  |  |
| 1.                              | Create a worksheet to maintain student information such as RollNo, Name, Class, Marks in three subjects of 10 students. Calculate total marks, average and grade. Find grade for Distinction, First class, Second class, Pass and Fail using normally used conditions. <ul style="list-style-type: none"><li>Using custom sort, sort the data according to class Distinction first, First Class next, and so on. Within each class, average marks should be in descending order.</li><li>Also draw the Column Chart showing the RollNo versus Average scored.</li></ul>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |               |        |                   |             |              |     |       |     |       |     |    |     |      |           |        |        |        |        |  |  |      |             |  |  |         |  |  |  |  |  |  |           |  |  |  |  |  |  |          |  |  |  |  |  |  |        |  |  |  |  |  |  |          |  |  |  |  |  |     |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |                         |  |  |  |  |  |  |  |                           |  |  |  |  |  |                                 |  |  |  |  |  |                                |  |  |  |  |  |
| 2.                              | Prepare a worksheet to store details of Electricity consumed by customers. Details are Customer No, Customer Name, Meter No, Previous meter reading, Current meter reading of 10 customers. Calculate total number of units consumed and total amount to be paid by each consumer using following conditions: <ul style="list-style-type: none"><li>If unit consumed is up to 30, charge is 100.</li><li>31 to 100 units, 4.70 per unit</li><li>101 to 200 units, 6.25 per unit</li><li>Above 200 units, 7.30 per unit.</li><li>Use Data validation to see that current reading is more than previous reading.</li><li>Arrange the records in the alphabetic order of names.</li><li>Filter the records whose bill amount is more than Rs.1500.</li></ul>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |               |        |                   |             |              |     |       |     |       |     |    |     |      |           |        |        |        |        |  |  |      |             |  |  |         |  |  |  |  |  |  |           |  |  |  |  |  |  |          |  |  |  |  |  |  |        |  |  |  |  |  |  |          |  |  |  |  |  |     |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |                         |  |  |  |  |  |  |  |                           |  |  |  |  |  |                                 |  |  |  |  |  |                                |  |  |  |  |  |



| 3.     | <p>Create Employee worksheet having EmpNo, EmpName, DOJ, Department, Designation and Basic Pay of 8 employees. Calculate DA, HRA, Gross Pay, Profession Tax, Net Pay, Provident Fund as per the rule</p> <ul style="list-style-type: none"><li>DA = 30% of basic pay</li><li>HRA = 10% of basic pay if basic pay is less than 25000, 15% of basic pay otherwise.</li><li>Gross =DA +HRA+ Basic pay</li><li>Provident fund =12% of Basic pay or Rs.2000, whichever is less.</li><li>Profession Tax= Rs.100 if Gross pay is less than 10000, Rs.200 otherwise.</li><li>NetPay = Gross - (Professional tax + Provident Fund)</li><li>Using Pivot table, display the number of employees in each department and represent it using Pie chart.</li></ul>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |             |            |             |              |       |              |      |        |         |    |            |       |     |        |       |    |           |       |     |        |          |    |           |       |     |        |    |    |           |       |     |        |            |    |           |       |     |        |        |    |           |       |     |       |         |    |           |      |     |          |          |    |           |       |     |       |       |    |           |       |     |            |            |    |          |       |
|--------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------|------------|-------------|--------------|-------|--------------|------|--------|---------|----|------------|-------|-----|--------|-------|----|-----------|-------|-----|--------|----------|----|-----------|-------|-----|--------|----|----|-----------|-------|-----|--------|------------|----|-----------|-------|-----|--------|--------|----|-----------|-------|-----|-------|---------|----|-----------|------|-----|----------|----------|----|-----------|-------|-----|-------|-------|----|-----------|-------|-----|------------|------------|----|----------|-------|
| 4.     | <p>Create a table COMMISSION containing the percentage of commission to be given to salesmen in different zones as follows:</p> <table><tr><th>Zone</th><th>Percentage</th></tr><tr><td>South</td><td>10</td></tr><tr><td>North</td><td>12.5</td></tr><tr><td>East</td><td>14</td></tr><tr><td>West</td><td>13</td></tr></table> <p>Create another table SALES in the same worksheet to store salesman name, zone name, place, name of the item sold, rate per unit, quantity sold. Calculate total sales amount of each salesman. Referring the COMMISSION table, write the formula to compute the commission to be given.(Hint: Use if function and absolute cell addresses)</p> <p>Using advanced filtering show the result in other parts of the worksheet.</p> <ul style="list-style-type: none"><li>Show the records of various zones separately.</li><li>Show the records of only East and West zones.</li><li>Display the details of the items sold more than 50, in South or North zones.</li></ul>                                                                                                                                                                                                                                                                                                | Zone        | Percentage | South       | 10           | North | 12.5         | East | 14     | West    | 13 |            |       |     |        |       |    |           |       |     |        |          |    |           |       |     |        |    |    |           |       |     |        |            |    |           |       |     |        |        |    |           |       |     |       |         |    |           |      |     |          |          |    |           |       |     |       |       |    |           |       |     |            |            |    |          |       |
| Zone   | Percentage                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |             |            |             |              |       |              |      |        |         |    |            |       |     |        |       |    |           |       |     |        |          |    |           |       |     |        |    |    |           |       |     |        |            |    |           |       |     |        |        |    |           |       |     |       |         |    |           |      |     |          |          |    |           |       |     |       |       |    |           |       |     |            |            |    |          |       |
| South  | 10                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |             |            |             |              |       |              |      |        |         |    |            |       |     |        |       |    |           |       |     |        |          |    |           |       |     |        |    |    |           |       |     |        |            |    |           |       |     |        |        |    |           |       |     |       |         |    |           |      |     |          |          |    |           |       |     |       |       |    |           |       |     |            |            |    |          |       |
| North  | 12.5                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |             |            |             |              |       |              |      |        |         |    |            |       |     |        |       |    |           |       |     |        |          |    |           |       |     |        |    |    |           |       |     |        |            |    |           |       |     |        |        |    |           |       |     |       |         |    |           |      |     |          |          |    |           |       |     |       |       |    |           |       |     |            |            |    |          |       |
| East   | 14                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |             |            |             |              |       |              |      |        |         |    |            |       |     |        |       |    |           |       |     |        |          |    |           |       |     |        |    |    |           |       |     |        |            |    |           |       |     |        |        |    |           |       |     |       |         |    |           |      |     |          |          |    |           |       |     |       |       |    |           |       |     |            |            |    |          |       |
| West   | 13                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |             |            |             |              |       |              |      |        |         |    |            |       |     |        |       |    |           |       |     |        |          |    |           |       |     |        |    |    |           |       |     |        |            |    |           |       |     |        |        |    |           |       |     |       |         |    |           |      |     |          |          |    |           |       |     |       |       |    |           |       |     |            |            |    |          |       |
| 1.     | <p>Create Employee database and table Emp using MS ACCESS with following Structure.</p> <table><tr><th>Emp no</th><th>Ename</th><th>Designation</th><th>Dep tno</th><th>DOJ</th><th>Basic Salary</th></tr><tr><td>101</td><td>RAMESH</td><td>MANAGER</td><td>10</td><td>10/10/2000</td><td>25000</td></tr><tr><td>102</td><td>SMITHA</td><td>CLERK</td><td>12</td><td>12/5/1999</td><td>15000</td></tr><tr><td>103</td><td>DEVIKA</td><td>ATTENDER</td><td>10</td><td>11/9/2001</td><td>12000</td></tr><tr><td>104</td><td>RAJESH</td><td>HR</td><td>15</td><td>15/4/2000</td><td>12000</td></tr><tr><td>105</td><td>GIRISH</td><td>SUPERVISOR</td><td>12</td><td>6/11/2005</td><td>18000</td></tr><tr><td>106</td><td>SATHYA</td><td>DRIVER</td><td>16</td><td>11/9/2001</td><td>11000</td></tr><tr><td>107</td><td>MANOJ</td><td>SWEEPER</td><td>10</td><td>22/6/2006</td><td>8000</td></tr><tr><td>108</td><td>BHOOMIKA</td><td>SECURITY</td><td>15</td><td>12/5/1999</td><td>10500</td></tr><tr><td>109</td><td>KIRAN</td><td>CLERK</td><td>14</td><td>11/9/2001</td><td>15000</td></tr><tr><td>110</td><td>PRATHIKSHA</td><td>SUPERVISOR</td><td>10</td><td>8/8/2005</td><td>18000</td></tr></table> <p>Perform following operation</p> <p>a) List all the Employees Who are working in Dept no.10</p> | Emp no      | Ename      | Designation | Dep tno      | DOJ   | Basic Salary | 101  | RAMESH | MANAGER | 10 | 10/10/2000 | 25000 | 102 | SMITHA | CLERK | 12 | 12/5/1999 | 15000 | 103 | DEVIKA | ATTENDER | 10 | 11/9/2001 | 12000 | 104 | RAJESH | HR | 15 | 15/4/2000 | 12000 | 105 | GIRISH | SUPERVISOR | 12 | 6/11/2005 | 18000 | 106 | SATHYA | DRIVER | 16 | 11/9/2001 | 11000 | 107 | MANOJ | SWEEPER | 10 | 22/6/2006 | 8000 | 108 | BHOOMIKA | SECURITY | 15 | 12/5/1999 | 10500 | 109 | KIRAN | CLERK | 14 | 11/9/2001 | 15000 | 110 | PRATHIKSHA | SUPERVISOR | 10 | 8/8/2005 | 18000 |
| Emp no | Ename                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       | Designation | Dep tno    | DOJ         | Basic Salary |       |              |      |        |         |    |            |       |     |        |       |    |           |       |     |        |          |    |           |       |     |        |    |    |           |       |     |        |            |    |           |       |     |        |        |    |           |       |     |       |         |    |           |      |     |          |          |    |           |       |     |       |       |    |           |       |     |            |            |    |          |       |
| 101    | RAMESH                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      | MANAGER     | 10         | 10/10/2000  | 25000        |       |              |      |        |         |    |            |       |     |        |       |    |           |       |     |        |          |    |           |       |     |        |    |    |           |       |     |        |            |    |           |       |     |        |        |    |           |       |     |       |         |    |           |      |     |          |          |    |           |       |     |       |       |    |           |       |     |            |            |    |          |       |
| 102    | SMITHA                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      | CLERK       | 12         | 12/5/1999   | 15000        |       |              |      |        |         |    |            |       |     |        |       |    |           |       |     |        |          |    |           |       |     |        |    |    |           |       |     |        |            |    |           |       |     |        |        |    |           |       |     |       |         |    |           |      |     |          |          |    |           |       |     |       |       |    |           |       |     |            |            |    |          |       |
| 103    | DEVIKA                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      | ATTENDER    | 10         | 11/9/2001   | 12000        |       |              |      |        |         |    |            |       |     |        |       |    |           |       |     |        |          |    |           |       |     |        |    |    |           |       |     |        |            |    |           |       |     |        |        |    |           |       |     |       |         |    |           |      |     |          |          |    |           |       |     |       |       |    |           |       |     |            |            |    |          |       |
| 104    | RAJESH                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      | HR          | 15         | 15/4/2000   | 12000        |       |              |      |        |         |    |            |       |     |        |       |    |           |       |     |        |          |    |           |       |     |        |    |    |           |       |     |        |            |    |           |       |     |        |        |    |           |       |     |       |         |    |           |      |     |          |          |    |           |       |     |       |       |    |           |       |     |            |            |    |          |       |
| 105    | GIRISH                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      | SUPERVISOR  | 12         | 6/11/2005   | 18000        |       |              |      |        |         |    |            |       |     |        |       |    |           |       |     |        |          |    |           |       |     |        |    |    |           |       |     |        |            |    |           |       |     |        |        |    |           |       |     |       |         |    |           |      |     |          |          |    |           |       |     |       |       |    |           |       |     |            |            |    |          |       |
| 106    | SATHYA                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      | DRIVER      | 16         | 11/9/2001   | 11000        |       |              |      |        |         |    |            |       |     |        |       |    |           |       |     |        |          |    |           |       |     |        |    |    |           |       |     |        |            |    |           |       |     |        |        |    |           |       |     |       |         |    |           |      |     |          |          |    |           |       |     |       |       |    |           |       |     |            |            |    |          |       |
| 107    | MANOJ                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       | SWEEPER     | 10         | 22/6/2006   | 8000         |       |              |      |        |         |    |            |       |     |        |       |    |           |       |     |        |          |    |           |       |     |        |    |    |           |       |     |        |            |    |           |       |     |        |        |    |           |       |     |       |         |    |           |      |     |          |          |    |           |       |     |       |       |    |           |       |     |            |            |    |          |       |
| 108    | BHOOMIKA                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    | SECURITY    | 15         | 12/5/1999   | 10500        |       |              |      |        |         |    |            |       |     |        |       |    |           |       |     |        |          |    |           |       |     |        |    |    |           |       |     |        |            |    |           |       |     |        |        |    |           |       |     |       |         |    |           |      |     |          |          |    |           |       |     |       |       |    |           |       |     |            |            |    |          |       |
| 109    | KIRAN                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       | CLERK       | 14         | 11/9/2001   | 15000        |       |              |      |        |         |    |            |       |     |        |       |    |           |       |     |        |          |    |           |       |     |        |    |    |           |       |     |        |            |    |           |       |     |        |        |    |           |       |     |       |         |    |           |      |     |          |          |    |           |       |     |       |       |    |           |       |     |            |            |    |          |       |
| 110    | PRATHIKSHA                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  | SUPERVISOR  | 10         | 8/8/2005    | 18000        |       |              |      |        |         |    |            |       |     |        |       |    |           |       |     |        |          |    |           |       |     |        |    |    |           |       |     |        |            |    |           |       |     |        |        |    |           |       |     |       |         |    |           |      |     |          |          |    |           |       |     |       |       |    |           |       |     |            |            |    |          |       |



|           | <p>b) List all the Employees who get less than 20000 Salary</p> <p>c). Update Salary by adding the increments as per the following:-</p> <p>i. 10% Increment in Basic Salary who get &lt; 20000</p> <p>ii. 5% Increment in Basic Salary who get &gt;=20000.</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |                    |               |                    |                    |               |                    |               |              |         |            |              |     |        |      |      |           |      |            |     |    |        |      |         |               |      |            |          |    |       |      |      |           |      |            |              |     |          |      |        |           |      |           |         |    |       |      |      |           |      |           |              |    |        |      |        |               |      |           |     |    |        |      |      |           |      |          |         |    |       |      |      |               |
|-----------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------|---------------|--------------------|--------------------|---------------|--------------------|---------------|--------------|---------|------------|--------------|-----|--------|------|------|-----------|------|------------|-----|----|--------|------|---------|---------------|------|------------|----------|----|-------|------|------|-----------|------|------------|--------------|-----|----------|------|--------|-----------|------|-----------|---------|----|-------|------|------|-----------|------|-----------|--------------|----|--------|------|--------|---------------|------|-----------|-----|----|--------|------|------|-----------|------|----------|---------|----|-------|------|------|---------------|
| 2.        | <p>Create the “ Order” database and a table “Orderdtl” having following records:</p> <table><tr><th>Order No</th><th>Order Date</th><th>Order Item</th><th>Order Qty</th><th>Order Price</th><th>Client Code</th><th>Delivery Type</th><th>Order Status</th></tr><tr><td>1011</td><td>12/02/2015</td><td>LED Monitors</td><td>100</td><td>750000</td><td>1025</td><td>Road</td><td>Delivered</td></tr><tr><td>1012</td><td>12/03/2015</td><td>CPU</td><td>12</td><td>500000</td><td>1026</td><td>SHIP</td><td>Not Delivered</td></tr><tr><td>1005</td><td>15/02/2014</td><td>Keyboard</td><td>80</td><td>48000</td><td>1027</td><td>Road</td><td>Delivered</td></tr><tr><td>1010</td><td>02/02/2016</td><td>LED Monitors</td><td>30</td><td>64000</td><td>1028</td><td>Flight</td><td>Delivered</td></tr><tr><td>1016</td><td>19/4/2015</td><td>Scanner</td><td>40</td><td>35000</td><td>1029</td><td>Road</td><td>Delivered</td></tr><tr><td>1009</td><td>9/05/2018</td><td>LED Monitors</td><td>25</td><td>125000</td><td>1030</td><td>Flight</td><td>Not Delivered</td></tr><tr><td>1008</td><td>13/8/2017</td><td>CPU</td><td>25</td><td>450000</td><td>1031</td><td>SHIP</td><td>Delivered</td></tr><tr><td>1014</td><td>1/7/2018</td><td>Printer</td><td>50</td><td>90000</td><td>1032</td><td>Road</td><td>Not Delivered</td></tr></table> <p>Execute following Query</p> <p>a) Display all the Order No. which have not been yet Delivered.</p> <p>b) Display all the Orders of LED Monitor and CPU.</p> <p>c) Display all the Orders of LED Monitor and CPU which are not have been delivered yet.</p> | Order No           | Order Date    | Order Item         | Order Qty          | Order Price   | Client Code        | Delivery Type | Order Status | 1011    | 12/02/2015 | LED Monitors | 100 | 750000 | 1025 | Road | Delivered | 1012 | 12/03/2015 | CPU | 12 | 500000 | 1026 | SHIP    | Not Delivered | 1005 | 15/02/2014 | Keyboard | 80 | 48000 | 1027 | Road | Delivered | 1010 | 02/02/2016 | LED Monitors | 30  | 64000    | 1028 | Flight | Delivered | 1016 | 19/4/2015 | Scanner | 40 | 35000 | 1029 | Road | Delivered | 1009 | 9/05/2018 | LED Monitors | 25 | 125000 | 1030 | Flight | Not Delivered | 1008 | 13/8/2017 | CPU | 25 | 450000 | 1031 | SHIP | Delivered | 1014 | 1/7/2018 | Printer | 50 | 90000 | 1032 | Road | Not Delivered |
| Order No  | Order Date                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      | Order Item         | Order Qty     | Order Price        | Client Code        | Delivery Type | Order Status       |               |              |         |            |              |     |        |      |      |           |      |            |     |    |        |      |         |               |      |            |          |    |       |      |      |           |      |            |              |     |          |      |        |           |      |           |         |    |       |      |      |           |      |           |              |    |        |      |        |               |      |           |     |    |        |      |      |           |      |          |         |    |       |      |      |               |
| 1011      | 12/02/2015                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      | LED Monitors       | 100           | 750000             | 1025               | Road          | Delivered          |               |              |         |            |              |     |        |      |      |           |      |            |     |    |        |      |         |               |      |            |          |    |       |      |      |           |      |            |              |     |          |      |        |           |      |           |         |    |       |      |      |           |      |           |              |    |        |      |        |               |      |           |     |    |        |      |      |           |      |          |         |    |       |      |      |               |
| 1012      | 12/03/2015                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      | CPU                | 12            | 500000             | 1026               | SHIP          | Not Delivered      |               |              |         |            |              |     |        |      |      |           |      |            |     |    |        |      |         |               |      |            |          |    |       |      |      |           |      |            |              |     |          |      |        |           |      |           |         |    |       |      |      |           |      |           |              |    |        |      |        |               |      |           |     |    |        |      |      |           |      |          |         |    |       |      |      |               |
| 1005      | 15/02/2014                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      | Keyboard           | 80            | 48000              | 1027               | Road          | Delivered          |               |              |         |            |              |     |        |      |      |           |      |            |     |    |        |      |         |               |      |            |          |    |       |      |      |           |      |            |              |     |          |      |        |           |      |           |         |    |       |      |      |           |      |           |              |    |        |      |        |               |      |           |     |    |        |      |      |           |      |          |         |    |       |      |      |               |
| 1010      | 02/02/2016                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      | LED Monitors       | 30            | 64000              | 1028               | Flight        | Delivered          |               |              |         |            |              |     |        |      |      |           |      |            |     |    |        |      |         |               |      |            |          |    |       |      |      |           |      |            |              |     |          |      |        |           |      |           |         |    |       |      |      |           |      |           |              |    |        |      |        |               |      |           |     |    |        |      |      |           |      |          |         |    |       |      |      |               |
| 1016      | 19/4/2015                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       | Scanner            | 40            | 35000              | 1029               | Road          | Delivered          |               |              |         |            |              |     |        |      |      |           |      |            |     |    |        |      |         |               |      |            |          |    |       |      |      |           |      |            |              |     |          |      |        |           |      |           |         |    |       |      |      |           |      |           |              |    |        |      |        |               |      |           |     |    |        |      |      |           |      |          |         |    |       |      |      |               |
| 1009      | 9/05/2018                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       | LED Monitors       | 25            | 125000             | 1030               | Flight        | Not Delivered      |               |              |         |            |              |     |        |      |      |           |      |            |     |    |        |      |         |               |      |            |          |    |       |      |      |           |      |            |              |     |          |      |        |           |      |           |         |    |       |      |      |           |      |           |              |    |        |      |        |               |      |           |     |    |        |      |      |           |      |          |         |    |       |      |      |               |
| 1008      | 13/8/2017                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       | CPU                | 25            | 450000             | 1031               | SHIP          | Delivered          |               |              |         |            |              |     |        |      |      |           |      |            |     |    |        |      |         |               |      |            |          |    |       |      |      |           |      |            |              |     |          |      |        |           |      |           |         |    |       |      |      |           |      |           |              |    |        |      |        |               |      |           |     |    |        |      |      |           |      |          |         |    |       |      |      |               |
| 1014      | 1/7/2018                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        | Printer            | 50            | 90000              | 1032               | Road          | Not Delivered      |               |              |         |            |              |     |        |      |      |           |      |            |     |    |        |      |         |               |      |            |          |    |       |      |      |           |      |            |              |     |          |      |        |           |      |           |         |    |       |      |      |           |      |           |              |    |        |      |        |               |      |           |     |    |        |      |      |           |      |          |         |    |       |      |      |               |
| 3.        | <p>Create a “Stock” database having “Inventory” table:</p> <table><tr><th>Item Code</th><th>Item Name</th><th>Opening Stock(Qty)</th><th>Purchase(Qty)</th><th>Sale (Qty)</th><th>Closing Stock(Qty)</th><th>Remark</th></tr><tr><td>101</td><td>MONITOR</td><td>100</td><td>25</td><td>35</td><td></td><td></td></tr><tr><td>102</td><td>PRINTER</td><td>75</td><td>40</td><td>15</td><td></td><td></td></tr><tr><td>103</td><td>SCANNER</td><td>120</td><td>30</td><td>20</td><td></td><td></td></tr><tr><td>104</td><td>CPU</td><td>50</td><td>35</td><td>10</td><td></td><td></td></tr><tr><td>105</td><td>KEYBOARD</td><td>105</td><td>45</td><td>55</td><td></td><td></td></tr></table> <p>Execute following Query</p> <p>a) Calculate the closing stock of each item (Closing Stock = Opening Stock + Purchase – Sales)</p> <p>b) Display all the Items which has closing stock &lt; 100</p> <p>c) If closing stock is less than 100 then set the remark as “Re-Order Level” otherwise “Enough Stock”.</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               | Item Code          | Item Name     | Opening Stock(Qty) | Purchase(Qty)      | Sale (Qty)    | Closing Stock(Qty) | Remark        | 101          | MONITOR | 100        | 25           | 35  |        |      | 102  | PRINTER   | 75   | 40         | 15  |    |        | 103  | SCANNER | 120           | 30   | 20         |          |    | 104   | CPU  | 50   | 35        | 10   |            |              | 105 | KEYBOARD | 105  | 45     | 55        |      |           |         |    |       |      |      |           |      |           |              |    |        |      |        |               |      |           |     |    |        |      |      |           |      |          |         |    |       |      |      |               |
| Item Code | Item Name                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       | Opening Stock(Qty) | Purchase(Qty) | Sale (Qty)         | Closing Stock(Qty) | Remark        |                    |               |              |         |            |              |     |        |      |      |           |      |            |     |    |        |      |         |               |      |            |          |    |       |      |      |           |      |            |              |     |          |      |        |           |      |           |         |    |       |      |      |           |      |           |              |    |        |      |        |               |      |           |     |    |        |      |      |           |      |          |         |    |       |      |      |               |
| 101       | MONITOR                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         | 100                | 25            | 35                 |                    |               |                    |               |              |         |            |              |     |        |      |      |           |      |            |     |    |        |      |         |               |      |            |          |    |       |      |      |           |      |            |              |     |          |      |        |           |      |           |         |    |       |      |      |           |      |           |              |    |        |      |        |               |      |           |     |    |        |      |      |           |      |          |         |    |       |      |      |               |
| 102       | PRINTER                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         | 75                 | 40            | 15                 |                    |               |                    |               |              |         |            |              |     |        |      |      |           |      |            |     |    |        |      |         |               |      |            |          |    |       |      |      |           |      |            |              |     |          |      |        |           |      |           |         |    |       |      |      |           |      |           |              |    |        |      |        |               |      |           |     |    |        |      |      |           |      |          |         |    |       |      |      |               |
| 103       | SCANNER                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         | 120                | 30            | 20                 |                    |               |                    |               |              |         |            |              |     |        |      |      |           |      |            |     |    |        |      |         |               |      |            |          |    |       |      |      |           |      |            |              |     |          |      |        |           |      |           |         |    |       |      |      |           |      |           |              |    |        |      |        |               |      |           |     |    |        |      |      |           |      |          |         |    |       |      |      |               |
| 104       | CPU                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             | 50                 | 35            | 10                 |                    |               |                    |               |              |         |            |              |     |        |      |      |           |      |            |     |    |        |      |         |               |      |            |          |    |       |      |      |           |      |            |              |     |          |      |        |           |      |           |         |    |       |      |      |           |      |           |              |    |        |      |        |               |      |           |     |    |        |      |      |           |      |          |         |    |       |      |      |               |
| 105       | KEYBOARD                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        | 105                | 45            | 55                 |                    |               |                    |               |              |         |            |              |     |        |      |      |           |      |            |     |    |        |      |         |               |      |            |          |    |       |      |      |           |      |            |              |     |          |      |        |           |      |           |         |    |       |      |      |           |      |           |              |    |        |      |        |               |      |           |     |    |        |      |      |           |      |          |         |    |       |      |      |               |

### Evaluation Scheme for Lab Examination:

| Assessment Criteria    |                               |          |
|------------------------|-------------------------------|----------|
| Activity-1 from Part-A | Word Processing /Presentation | 6 Marks  |
| Activity-2 from Part-B | Spread Sheet                  | 8 Marks  |
| Activity-3 from Part-C | Acess                         | 6 Marks  |
| Practical Record       |                               | 05 Marks |
| Total                  |                               | 25 Marks |

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|                         |                                        |
|-------------------------|----------------------------------------|
| Course Code: CAC02P     | Course Title: <b>C Programming Lab</b> |
| Course Credits: 02      | Hours/Week: 04                         |
| Total Contact Hours: 52 | Formative Assessment Marks: 25         |
| Exam Marks: 25          | Exam Duration: 03                      |

REVISED I Sem BCA Practical LISTC Programming  
Lab-CAC02P

| Sl. NO.       | PROGRAM                                                                                                                                                                                              |
|---------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>PART A</b> |                                                                                                                                                                                                      |
| 1             | Program to find the roots of quadratic equation using else if ladder.                                                                                                                                |
| 2             | Program to read two integer values & a operator as character and perform basic arithmetic operations on them using switch case (+, -, *, / operations)                                               |
| 3.            | Program to reverse a number and find the sum of individual digits. Also check for palindrome.                                                                                                        |
| 4.            | Program to calculate and display the first 'n' Fibonacci numbers                                                                                                                                     |
| 5.            | Program to find given number is a prime or not.                                                                                                                                                      |
| 6.            | Program to count occurrences of each character in a given string.                                                                                                                                    |
| 7.            | Program to read string with alphabets, digits and special characters and convert upper case letters to lower case and vice a versa and retain the digits and special characters as it is.            |
| 8.            | Program to search for number of occurances of number in a list of numbers using one-dimensional array also display its positions.                                                                    |
| <b>PART-B</b> |                                                                                                                                                                                                      |
| 1.            | Program to find the largest and smallest elements with their position in a one-dimensional array.                                                                                                    |
| 2.            | Program to read 'n' integer values into a single dimension array and arrange them in ascending order using bubble sort method.                                                                       |
| 3.            | Menu driven Program to perform addition and multiplication of two Matrices                                                                                                                           |
| 4.            | Program to find nCr and nPr using recursive function to caculate factorial.                                                                                                                          |
| 5.            | Program to read a string and count number of letters, digits, vowels, consonants, spaces and special characters present in it using user defiend function.                                           |
| 6.            | Program sort a list of strings in ascending order using Pointers                                                                                                                                     |
| 7.            | Program to enter the information of a student like name, register number, marks in three subjects into a structure and display total, average and grade Display details in a neat form.              |
| 8.            | Program to input Name of the branches, Total sales of company into an array of structures. Display branch details in a tabular format. Also display the branch name that recorded the highest sales. |

Evaluation Scheme for Lab Examination:

| <b>Assessment Criteria</b> |                                                          |                 |
|----------------------------|----------------------------------------------------------|-----------------|
| <b>Program-1</b>           | <b>PART-A</b><br><b>Writing:4 Marks Execution:4Marks</b> | <b>8 Marks</b>  |
| <b>Program-2</b>           | <b>PART-B</b><br><b>Writing:6 Marks Execution:6Marks</b> | <b>12 Marks</b> |
| <b>Practical Record</b>    |                                                          | <b>05 Marks</b> |
| <b>Total</b>               |                                                          | <b>25 Marks</b> |

# MANGALORE UNIVERSITY

## Choice Based Credit System Semester Scheme with Multiple Entry and Exit Options in the UG Programmes under NEP 2020

### Bachelor of Computer Applications (BCA) Degree Programme

2021-2022 Onwards

## II SEMESTER BCA

### BLOWN UP SYLLABUS & PRACTICAL LISTS

|                         |                                              |
|-------------------------|----------------------------------------------|
| Course Code: CAC04      | Course Title: <b>Data Structures using C</b> |
| Course Credits: 03      | Hours/Week: 03                               |
| Total Contact Hours: 42 | Formative Assessment Marks: 40               |
| Exam Marks: 60          | Exam Duration: 02 Hours                      |

| Topics                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              | Chapter No | Page No/Section                                      |
|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------|------------------------------------------------------|
| <b>UNIT 1 [12 HOURS]</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |            |                                                      |
| <b>Introduction to data structures:</b> Introduction, Basic terminology; Elementary Data Organization, Data Structures, Data Structure Operations<br><b>Introduction to Algorithms,</b><br><b>Preliminaries:</b> Introduction, Algorithmic notations, Control structure.<br><b>Recursion:</b> Definition; Recursion Technique Examples –Factorial, Fibonacci sequence, Towers of Hanoi.<br><b>Arrays:</b> Basic Concepts – Definition, Declaration, Initialization, Operations on arrays, Types of arrays, Representation of Linear Arrays in memory, Traversing linear arrays, Inserting and deleting elements, Multidimensional arrays- Two Dimensional Arrays Representation of two- dimensional arrays, Sparse matrices.<br><b>Sorting:</b> Selection sort, Bubble sort, Quick sort, Insertion sort, Merge sort | Chapter -1 | 1.1 to 1.4                                           |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     | Chapter 2  | 2.1,2.3,2.4                                          |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     | Chapter 6  | 6.8,6.9(complexity excluded)                         |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     | Chapter 4  | 4.1,4.2,4.4,4.5,4.6,4.10,4.17<br>4.7,                |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     | Chapter 9  | 6.7,9.1,9.3,9.4,9.6<br>(complexity excluded)         |
| <b>UNIT 2 [10 HOURS]</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |            |                                                      |
| <b>Searching :</b> Definition, Sequential Search, Binary search                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     | Chapter 4  | 4.8(complexity excluded in both 4.8 & 4.9 ),4.9,4.13 |

|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |                                                            |                                                                                                 |
|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------|-------------------------------------------------------------------------------------------------|
| <b>Dynamic memory management:</b> Memory allocation and de-allocation functions - malloc, calloc, realloc and free.<br><b>Linked list:</b> Basic Concepts – Definition and Representation of linked list, Types of linked lists - Singly linked list, Doubly linked list, Header linked list, Circular linked list, Representation of Linked list in Memory; Operations on Singly linked lists– Traversing, Searching, Insertion, Deletion,Memory allocation, Garbage collection                                                                                                                                                          | Chapter 5                                                  | 5.1,to 5.11,                                                                                    |
| <b>UNIT 3 [10 HOURS]</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |                                                            |                                                                                                 |
| <b>Stacks:</b> Basic Concepts –Definition and Representation of stacks- Array representation of stacks,<br>Linked representation of stacks, Operations on stacks, Applications of stacks, Infix, postfix and prefix notations, Conversion from infix to postfix using stack, Evaluation of postfix expression using stack,<br>Application of stack in function calls.<br><b>Queues:</b> Basic Concepts – Definition and Representation of queues- Array representation of Queues,<br>Linked representation of Queues, <b>Types of queues</b> - Simple queues, Circular queues, Double ended queues, Priority queues, Operations on queues | Chapter 6                                                  | 6.1,6.2,6.3,6.4,6.5,6.6,6.7,6.10<br><br>6.11,6.12,6.13,6.14,6.15,6.16<br>(6.79,6.80,6.87 only), |
| <b>UNIT IV [10 HOURS]</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |                                                            |                                                                                                 |
| <b>Trees:</b> Definition, Tree terminologies –node, root node, parent node, ancestors of a node, siblings, terminal & non-terminal nodes, degree of a node, level, edge, path, depth<br><b>Binary tree:</b> Type of binary trees - strict binary tree, complete binary tree, binary search tree;; Array representation of binary tree, Traversal of binary tree- preorder, inorder and postorder traversal<br><b>Graphs:</b> Terminologies, Matrix representation of graphs; Traversal: Breadth First Search and Depth first search.                                                                                                      | Chapter 7<br><br><br><br><br><br><br><br><br><br>Chapter 8 | 7.1,7.2,7.3,7.4,7.5,7.8,7.9<br><br><br><br><br><br><br><br><br><br>8.1,8.2,8.3,8.5,8.7          |
| <b>Text Book:</b><br>1. Seymour Lipschutz, Data Structures with C, Schaum's Outlines Series, Tata McGraw Hill, 2011                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |                                                            |                                                                                                 |

|                         |                                                            |
|-------------------------|------------------------------------------------------------|
| Course Code: CAC05      | <b>Course Title: Object Oriented Programming with JAVA</b> |
| Course Credits: 03      | Hours/Week: 03                                             |
| Total Contact Hours: 42 | Formative Assessment Marks: 40                             |
| Exam Marks: 60          | Exam Duration: 02 Hours                                    |

| Topics                                                                                                                                                                                                                                                                                                                                                           | Chapter No                                      | Page No/Section                                                  |
|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------|------------------------------------------------------------------|
| <b>UNIT 1 [12 HOURS]</b>                                                                                                                                                                                                                                                                                                                                         |                                                 |                                                                  |
| <b>Fundamentals of Object Oriented Programming:</b> Introduction, Object Oriented Paradigm, Basic Concepts of OOP, Benefits and Applications of OOP.                                                                                                                                                                                                             | Book 1<br>Chapter 1                             | 1.1,1.2 , 1.3,1.4 ,1.5                                           |
| <b>Introduction to Java:</b> Java Features, Java Environment, Simple Java Program, Java Program Structure, Java Tokens, Java Statements, Java Virtual Machine.                                                                                                                                                                                                   | Book 1<br>Chapter 2,<br>Chapter 3               | 2.2 ,2.9 ,3.2<br>,3.5,3.6,3.7,3.10                               |
| <b>Java Programming Basics:</b> Constants, Variables, Data Types, Declaration of variables, Giving values to the variable, Scope of variables, Symbolic constants, Type casting.                                                                                                                                                                                 | Book 1<br>Chapter 4                             | 4.2 , 4.3,4.4<br>,4.5,4.6,4.7,4.8.4.9                            |
| <b>Operators and Expressions:</b> Arithmetic Operators, Relational Operators, Logical Operators, Assignment Operator, Increment and Decrement Operators, Conditional Operator, Special Operators, Mathematical functions.                                                                                                                                        | Book 1<br>Chapter 5                             | 5.1,5.2,5.3,5.4,5.5,5.6,5.7,<br>5.9,5.15                         |
| <b>Using I/O:</b> Byte streams and character streams, predefined streams, reading console input, reading characters, strings, writing console output.                                                                                                                                                                                                            | Book 2<br>Chapter 13                            | P.No 285,286,288-292                                             |
| <b>Decision Making &amp; Branching:</b> Simple if statement, if..else statement, nesting of if..else statement, the else..if ladder, the Switch statement.                                                                                                                                                                                                       | Book 1<br>Chapter 6                             | 6.1 to 6.7                                                       |
| <b>UNIT 2 [10 HOURS]</b>                                                                                                                                                                                                                                                                                                                                         |                                                 |                                                                  |
| <b>Decision making &amp; Looping</b> -The while statement, the do statement, the for statement . Jumps in loops, Labelled loops.                                                                                                                                                                                                                                 | Book 1<br>Chapter 7                             | 7.1 to 7.6                                                       |
| <b>Class &amp; Objects</b> - Class Fundamentals, Declaring Objects, Assigning Object Reference Variables, Introducing Methods, Constructors, The 'this' keyword, Overloading Methods, Using Objects as Parameters, Returning Objects, Recursion, Understanding 'static', Introducing 'final ', Using Command-Line Arguments, Varargs : Variable-Length Arguments | Book 2<br>Chapter 6,<br><br>Book 2<br>Chapter 7 | P.No 105 to 120<br><br>P.No 125 to 132 ,134-136,141-143 ,150-152 |

|                                                                                                                                                                                                                                         |                      |                                      |
|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------|--------------------------------------|
| <b>Arrays and Strings:</b> One dimensional arrays, Creating an arrays, Two dimensional arrays , Strings, Vectors, Wrapper classes.                                                                                                      | Book 1<br>Chapter 9  | 9.1 To 9.7                           |
| <b>UNIT 3 [10 HOURS]</b>                                                                                                                                                                                                                |                      |                                      |
| <b>Inheritance</b> - Inheritance Basics, Using ‘super’, Creating Multilevel hierarchy, Method Overriding, Using Abstract Classes, Using final with Inheritance.                                                                         | Book 2<br>Chapter 8  | P.No 157 to 171 ,177 to 180          |
| <b>Packages &amp; Interfaces</b> - Packages, Access protection in packages, Importing Packages, Interfaces.                                                                                                                             | Book 2<br>Chapter 9  | P.No 183 to 194                      |
| <b>Exception Handling</b> - Exception Handling Fundamentals – Exception Types, Uncaught Exceptions, Using try and catch, Multiple catch clauses, finally, Java’s builtin Exceptions                                                     | Book 2<br>Chapter 10 | P.No 205 to 210,216-218              |
| <b>Multithreaded Programming-</b> Introduction, Creating threads, Extending the thread class, stopping & blocking thread, Life cycle of a thread, Using thread methods, Implementing the runnable interface.                            | Book 1<br>Chapter 12 | 12.1 to 12.6 ,12.10                  |
| <b>UNIT IV [10 HOURS]</b>                                                                                                                                                                                                               |                      |                                      |
| <b>Event and GUI programming:</b> The Applet Class, Types of Applets, Applet Basics, Applet Architecture, An Applet Skeleton, Simple Applet Display Methods, Requesting Repaint, The HTML APPLET tag.                                   | Book 2<br>Chapter 21 | P.No 617 to 625 ,629-630             |
| <b>Event Handling</b> - The delegation event model, Event Classes –ActionEvent, KeyEvent & MouseEvent Classes, Event Listener Interfaces – ActionListener, KeyListener & MouseListener interfaces. Using the Delegation Event Model.    | Book 2<br>Chapter 22 | P.No 637 to 641 , 645-646,650-658    |
| <b>Window Fundamentals</b> , Working with Frame Windows, Creating a Frame Window in an Applet. Creating a Windowed Program.                                                                                                             | Book 2<br>Chapter 23 | P.No 666-676                         |
| <b>Introducing swing</b> – two key swing features, components and containers, the swing packages, a simple swing application, event handling.                                                                                           | Book 2<br>Chapter 29 | P.No 860,862-865,868                 |
| <b>Exploring Swing-</b> Jlabel, JTextField, JButton, Checkboxes , Radio buttons , Jlist , JComboBox.                                                                                                                                    | Book 2<br>Chapter 30 | P.No 879 to 884 ,887 to 891 ,895-900 |
| <b>Text Books :</b><br>1. E Balagurusamy, Programming with Java – A Primer, Fourth Edition, Tata McGraw Hill Education Private Limited.<br>2. Herbert Schildt, Java : The Complete Reference, Seventh Edition, McGraw Hill Publication. |                      |                                      |



|                         |                                                       |
|-------------------------|-------------------------------------------------------|
| Course Code: CAC06      | <b>Course Title: Discrete Mathematical Structures</b> |
| Course Credits: 03      | Hours/Week: 03                                        |
| Total Contact Hours: 42 | Formative Assessment Marks: 40                        |
| Exam Marks: 60          | Exam Duration: 02 Hours                               |

| Contents                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  | Book | Section/Subsections                                                  |
|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------|----------------------------------------------------------------------|
| <b>Unit – 1 [12 Hours]</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |      |                                                                      |
| <b>Mathematical logic:</b> Introduction, Statements and Notation, Connectives-Negation, Conjunction, Disjunction, Statement Formulas and Truth Tables, Example 1-3, Exercises (1-2.4-1,2,4), Page No. 1-14,<br>Conditional and Biconditional, Example 1-5, Exercise 1-2.6-2,4, Well-formed Formulas, Tautologies, Exercise 1-2.8-1, Equivalence of Formulas, Example 1, Duality Law, Example 1, Tautological Implications Exercise 1-2.11-1,2,5, (Page No. 18-35), Predicates, Quantifiers (Page No. 80-85)<br><b>(Except all theorems with proofs and algorithms in each subsection)</b> | 1    | 1-1,<br>1-2<br><b>(Except 1-2.5, 1-2.12, 1-2.13, 1-2.14, 1-2.15)</b> |
| <b>Set Theory:</b> Definition, notation, inclusion and equality of sets, the power set, Exercise 2-1.3-1,2,4, Page No 104-111, (except definition 2-1.7)<br>Operations on sets, (All definitions with no proof), Example 1 3,5, Exercise 2-1.4 -2, 7, (Page No 111-115),<br>Venn diagrams, Exercise 2-1.5-2 (Page No. 116-118)<br>Ordered pairs, and n-tuples, Cartesian product, example 1, 2, Exercise 2-1-3,4 (Page No. 122-126)                                                                                                                                                       | 1    | 2-1<br><b>(Except 2-1.6, 2-1.7)</b>                                  |
| <b>Relations:</b> Introduction, Example 1, Exercise 2-3.1-1 (Page No. 148-151,153)<br>Properties of a binary relation in a set, Exercise 2-3.2-5<br>Relation matrix and graph of a relation, Example 1, 3 (Page No 154-159)<br>Equivalence relations, example 1,2 (Page no. 164-165), compatibility relations, composition of Binary relations, Example 1,2,3,4, (Page No 176-179) (except definition 2-3.10, 2-3.12, 2-3.15, algorithm, and theorem 2-3.1, 2-3.2)                                                                                                                        | 1    | 2-3<br><b>(Except 2-3.4)</b>                                         |
| <b>Unit –2 [10 Hours]</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |      |                                                                      |
| <b>Partial Ordering:</b> Definitions, lexicographic ordering, partially ordered set, Hasse diagram, Example 1,2(a, b, c), well ordered set (except definitions 2-3.18,2-3.19) Exercise 2-3.9-1 (Page No. 183-188,191)                                                                                                                                                                                                                                                                                                                                                                     | 1    | 2-3.8,<br>2-3.9,                                                     |
| <b>Functions:</b> Definition and introduction (except definition 2-4.2), graph of a function, types of functions, Exercise 2-4.1-5, Composition of functions, Example 1,2, Inverse functions,                                                                                                                                                                                                                                                                                                                                                                                             | 1    | 2-4.1 to 2-4.3                                                       |

|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |   |                                                   |
|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---|---------------------------------------------------|
| <p>Example 1, 2, Exercise 2-4.3-4 (Page No 192-205) (Theorems with no proofs)</p> <p><b>Counting:</b> Basics of counting (Product rule, sum rule, the inclusion-exclusion principle), Example 1-5, 12, 13, 18, 19, Exercise- 1, 2, 3, (Page No 385-393, 396), Pigeonhole principle (Theorem-1 statement-no proof and corollary), Example 1, 2, 3, (Page No 399-400), Permutation and combination, Example 1,4,5,10, 12, 13 Exercise-1,4, (only theorem and corollary statements- no proof), Page No 407-413)</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                   | 2 | 6-1,<br>6-2,<br>6-3                               |
| <b>Unit –3 [10 Hours]</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |   |                                                   |
| <p><b>Discrete Probability:</b> Introduction, finite probability, Example 1, 2, 4-6, (only theorem statements-no proof), (Page No 445-448), probabilities of complements and unions of events (except probability reasoning), Example 8, 9, (Page No 449-450), probability theory, Example 1, 2, (Page No 452-454), conditional probability, Example 3, 4, (Page no. 456-457), independence, Example 5,6,7 (except pairwise and mutual independence, Bernoulli Trials and the Binomial Distribution), (Page no. 457-458), Random variables, Example 10, 11, (Except Monte Carlo Algorithm and probabilistic method) (Page No 460), Bayes' theorem(no proof) , Example 2, 3,4, (Page No 470-474), Expected value and variance, Example 1,2 ,3 (Page No 477-479), ( Except Linearity of Expectations, Average-Case Computational Complexity, The Geometric Distribution), Independent random variables, Example 11, 13,15 ,16 (Page no 485-489) (except Chebyshev's Inequality).</p> | 2 | 7.1,<br>7.2,<br>7.3,<br>7.4                       |
| <p><b>Number Theory:</b> Division algorithm, Example 1, 3, 4, 5 ,7 Theorem 2, 3, Modular arithmetic, (Page No. 237-239, 241-243), Primes and greatest common divisors, Definitions 1,2,3,5 Least common multiple, Example 1, 4, 10, 11, 12, 15, (Page No 257, 259, 265-266), The Euclidean algorithm, Example 16, Exercise 24, 32(a,b,c), (Page no. 267,272).<br/>(No theorems, lemma, corollary and proofs)</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   | 2 | 4.1,<br>4.3                                       |
| <p><b>Mathematical Induction:</b> Mathematical Induction, principle of mathematical induction, Example 1, (Page No 311-313, 316), proving inequalities, Example 5, 6, (Page No 319-320), strong induction and well ordering (only statements), (Page No 334, 341)</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              | 2 | 5.1,<br>5.2                                       |
| <b>Unit –4 [10 Hours]</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |   |                                                   |
| <p><b>Graphs:</b> Graphs and Graph models (Only definitions with example figures, Page No 641-643), Graph Terminology and Special Types of Graphs, Examples 1, 3, 4, 5,6,7, (Page No. 651-655), (only theorem statements, no proof) (Except Bipartite Graphs, Some Applications of Special Types of Graphs), Example 18, 19, (Page No 663-664), Representing Graphs and Graph Isomorphism, Example 1, 2, 3, 4, 5,6,7,8 (Page No. 668-672), Exercise (Page No 675-557) 1,3,5,7,10,13, Connectivity, (Page No 678-681,685-686), Definition 1,2, 3, 4, 5, Example 1,4,10 (Except all theorems and proofs of this section), Euler and Hamilton Paths, Definition 1,</p>                                                                                                                                                                                                                                                                                                                | 2 | 10.1,<br>10.2,<br>10.3,<br>10.4,<br>10.5,<br>10.8 |

|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |   |       |
|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---|-------|
| <p>2, Example 1,2,5 (Page No 693-699), (<b>except</b> necessary and sufficient conditions for Euler circuits and paths, exclude all theorems and proofs of this section), Graph Coloring, Definition 1,2, Theorem 1(no proof), Example 1, (Page No. 727-729), Exercise 1,3 5,7, (Page No. 732).</p> <p><b>Trees:</b> Directed tree, leaf node, branch node, ordered tree, degree of a node, forest, descendent, m-ary tree, conversion of directed tree into a binary tree. (Page No 494-500)</p> | 1 | 5-1.4 |
| <p><b>Text Books:</b></p> <ol style="list-style-type: none"> <li>1. J.P. Trembley and R. Manobar, Discrete Mathematical Structures, McGraw Hill Education Private Limited, New Delhi,</li> <li>2. Kenneth H. Rosen, Discrete Mathematics and Its Applications, Seventh Edition, 2012.</li> </ol>                                                                                                                                                                                                  |   |       |

|                         |                                         |
|-------------------------|-----------------------------------------|
| Course Code: CAC04P     | <b>Course Title: Data Structure Lab</b> |
| Course Credits: 02      | Hours/Week: 04                          |
| Total Contact Hours: 52 | Formative Assessment Marks: 25          |
| Exam Marks: 25          | Exam Duration: 03 Hours                 |

### Part A

1. Program to sort the given list using selection sort technique.
2. Program to sort the given list using insertion sort technique.
3. Program to solve Tower of Hanoi using Recursion
4. Program to reverse String using Stack
5. Program to search an element using recursive binary search technique.
6. Program to implement Stack operations using arrays.
7. Program to implement Queue operations using arrays.
8. Program to implement dynamic array. Find smallest and largest element.

### Part B

1. Program to sort the given list using merge sort technique.
2. Program to implement circular queue using array.
3. Program to sort the given list using quick sort technique.
4. Program to implement Stack operations using linked list.
5. Program to implement Queue operations using linked list.
6. Program to evaluate postfix expression.
7. Program to perform insert node at the end, delete a given node and display contents of single linked list.
8. Menu driven program for the following operations on Binary Search Tree(BST) of Integers
  - (a) Create a BST of N Integers
  - (b) Traverse the BST in Inorder, Preorder and Post Order

### Evaluation Scheme for Lab Examination

| Assessment Criteria   |                          | Marks |
|-----------------------|--------------------------|-------|
| Program-1 from Part A | Writing the program      | 05    |
|                       | Execution and formatting | 03    |
| Program-1 from Part B | Writing the program      | 08    |
|                       | Execution and formatting | 04    |
| Practical Record      |                          | 05    |
| Total                 |                          | 25    |

|                         |                                |
|-------------------------|--------------------------------|
| Course Code: CAC05P     | Course Title: <b>JAVA Lab</b>  |
| Course Credits: 02      | Hours/Week: 04                 |
| Total Contact Hours: 52 | Formative Assessment Marks: 25 |
| Exam Marks: 25          | Exam Duration: 03 Hours        |

### PART A

1. Program to accept student name and marks in three subjects. Find the total marks, average and grade (depending on the average marks).
2. Program, which reads two numbers having same number of digits. The program outputs the sum of product of corresponding digits. (Hint Input 327 and 539 output  $3 \times 5 + 2 \times 3 + 7 \times 9 = 84$ )
3. Program to input Start and End limits and print all Fibonacci numbers between the ranges. ( Use for loop)
4. Define a class named Pay with data members String name, double salary, double da, double hra, double pf, double grossSal, double netSal and methods: Pay(String n, double s) - Parameterized constructor to initialize the data members, void calculate() - to calculate the following salary components, and void display() - to display the employee name, salary and all salary components.  
 Dearness Allowance = 15% of salary  
 House Rent Allowance = 10% of salary  
 Provident Fund = 12% of salary  
 Gross Salary = Salary + Dearness Allowance + House Rent Allowance  
 Net Salary = Gross Salary - Provident Fund  
 Write a main method to create object of the class and call the methods to compute and display the salary details.
5. Program to create a class DISTANCE with the data members feet and inches. Use a constructor to read the data and a member function Sum ( ) to add two distances by using objects as method arguments and show the result. (Input and output of inches should be less than 12.)
6. Program to create a class "Matrix" that would contain integer values having varied numbers of columns for each row. Print row-wise sum.
7. Program to extract portion of character string and print extracted string. Assume that 'n' characters extracted starting from mth character position.
8. Program to add, remove and display elements of a Vector

### PART-B

1. Create a class named 'Member' having data members: *Name, Age, PhoneNumber, Place and Salary*. It also has a method named 'printSalary' which prints the salary of the members. Two classes 'Employee' and 'Manager' inherit the 'Member' class. The 'Employee' and 'Manager' classes have data members 'specialization' and 'department' respectively. Now, assign name, age, phone number, address and salary to an employee and a manager by making an object of both of these classes and print the same.
2. Program to implement the following class hierarchy:  
 Student: id, name  
 StudentExam (derived from Student): Marks of 3subjects, total marks  
 StudentResult (derived from StudentExam) : percentage, grade  
 Define appropriate methods to accept and calculate grade based on existing criteria and display details of N students
3. Program to calculate marks of a student using multiple inheritance implemented through interface. Class **Student** with data members rollNo, name, String **cls** and methods to set and put data. Create another class **test** extended by class Student with data members mark1, mark2, mark3 and methods to set and put data. Create interface sports with members sportsWt = 5 and putWt(). Now let the

class results extends class test and implements interface sports. Write a Java program to read required data and display details in a neat format.

4. Program to create an abstract class named shape that contains two integers and an empty method named print Area(). Provide three classes named Rectangle, Triangle and Ellipse such that each one of the classes extends the class shape. Each one of the class contains only the method print Area() that print the area of the given shape.
5. Create a package to convert temperature in centigrade into Fahrenheit, and one more package to calculate the simple Interest. Implement both package in the Main () by accepting the required inputs for each application.
6. Program that implements a multi-threaded program has three threads. First thread generates a random integer every second, and if the value is even, second thread computes the square of the number and prints. If the value is odd the third thread will print the value of cube of the number.
7. Program that creates a user interface to perform basic integer operations. The user enters two numbers in the TextFields - Num1 and Num2. The result of operations must be displayed in the Result TextField when the “=” button is clicked. Appropriate Exception handling message to be displayed in the Result TextField when Num1 or Num2 is not an integer or Num2 is Zero when division operation is applied.
8. Using the swing components, design the frame for shopping a book that accepts book code, book name, and Price. Calculate the discount on code as follows.

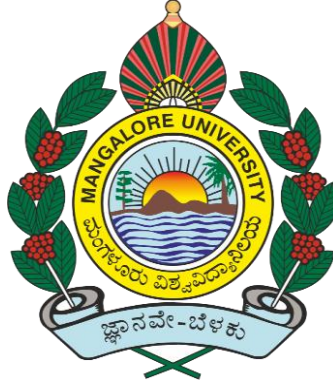
| <u>Code</u> | <u>Discount rate</u> |
|-------------|----------------------|
| 101         | 15%                  |
| 102         | 20%                  |
| 103         | 25%                  |
| Any other   | 5%                   |

Find the discount amount and Net bill amount. Display the bill.

#### Evaluation Scheme for Lab Examination

| Assessment Criteria     |                          | Marks     |
|-------------------------|--------------------------|-----------|
| Program – 1 from Part A | Writing the Program      | 05        |
|                         | Execution and Formatting | 03        |
| Program -2 from Part B  | Writing the Program      | 08        |
|                         | Execution and Formatting | 04        |
| Practical Record        |                          | 05        |
| <b>Total</b>            |                          | <b>25</b> |

# **MANGALORE UNIVERSITY**



## **National Education Policy – 2020 [NEP-2020]**

### **Curriculum Structure for**

### **Bachelor of Computer Application (B.C.A) Programme**

### **Syllabus for III and IV semesters**

### **And**

### **Open Elective Courses**

## Curriculum for BCA

| Sem | Core Courses                        | Hour / Week |     | DS Elective Courses | Hours/<br>Week |
|-----|-------------------------------------|-------------|-----|---------------------|----------------|
|     |                                     | Theory      | Lab |                     |                |
| III | Database Management Systems         | 3           |     |                     |                |
|     | C# and DOT NET Framework            | 3           |     |                     |                |
|     | Computer Communication and Networks | 3           |     |                     |                |
|     | LAB: DBMS                           |             | 4   |                     |                |
|     | LAB: C# and DOT NET Framework       |             | 4   |                     |                |
| IV  | Python Programming                  | 3           |     |                     |                |
|     | Computer Multimedia and Animation   | 3           |     |                     |                |
|     | Operating System Concepts           | 3           |     |                     |                |
|     | LAB: Multimedia and Animation       |             | 4   |                     |                |
|     | LAB: Python Programming             |             | 4   |                     |                |



## Course Content for BCA: III and IV Semesters

**Semester: III**

|                                                           |                                |
|-----------------------------------------------------------|--------------------------------|
| <b>Course Title:</b><br><b>Database Management System</b> | Course code: 21BCA3C7L         |
| Total Contact Hours: 42                                   | Course Credits: 03+02          |
| Formative Assessment Marks: 40                            | Duration of SEE/Exam: 02 Hours |
| Summative Assessment Marks: 60                            |                                |

**Course Outcomes (COs):**

**At the end of the course, students will be able to:**

- Understand the various database concepts and the need for database systems.
- Identify and define database objects, enforce integrity constraints on a database using DBMS.
- Demonstrate a Data model and Schemas in RDBMS.
- Identify entities and relationships and design ER diagrams for given real-world problems.
- Represent ER model to relational model and its implementation through SQL.
- Formulate queries in Relational Algebra, Structured Query Language (SQL) for database manipulation.
- Understand the transaction processing and concurrency control techniques.

## DSC7: Database Management System (DBMS)

| Contents                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          | Hours     |
|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------|
| <b>Unit-1</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |           |
| <b>Database Architecture:</b> Introduction to Database system applications. Characteristics, Data models, Database schema, Database architecture, Data independence, Database languages, GUIs, and Classification of DBMS.<br><b>E-R Model:</b> E-R Model Concepts: Entity, Entity types, Entity sets, Attributes, Types of attributes, key attribute, and domain of an attribute. Relationships between the entities. Relationship types, Roles and structural constraints, degree and cardinality ratio of a relationship. Weak entity types, E -R diagram.                                                                                                                                                                                                                                                                                                                                                                                                                                                                     | <b>11</b> |
| <b>Unit-2</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |           |
| <b>Relational Data Model:</b> Relational model concepts. Characteristics of relations. Relational model constraints: Domain constraints, key constraints, primary & foreign key constraints, integrity constraints and null values.<br><b>Data Normalization:</b> Functional dependencies. Normalization. First normal form, Second normal form, Third normal form. Boyce-Codd normal form.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       | <b>11</b> |
| <b>Unit-3</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |           |
| <b>INTERACTIVE SQL:</b> Table fundamentals, oracle data types, CREATE TABLE command, Inserting data into table, Viewing Data in the table, sorting data in a table, Creating a table from a table, Inserting data into a table from another table, Delete operations, Updating the contents of a table, Modifying the structure of tables, Renaming tables, destroying tables, displaying table structure.<br><b>DATA CONSTRAINTS :</b> Types of data constraints, IO constraints-The PRIMARY KEY constraint, The FOREIGN KEY constraint, The UNIQUE KEY constraint, Business Rule Constraints- NULL value concepts NOT NULL constraints, CHECK constraint, DEFAULT VALUE concepts.<br><b>COMPUTATIONS ON TABLE DATA:</b> Arithmetic Operators, Logical Operators, Range Searching, Pattern Matching, Oracle Table – DUAL, Oracle Function- Types, Aggregate Function, Date Conversion Function. GROUPING DATA FROM TABLES IN SQL, Group By clause, Having clause, subqueries, JOINS, Using the UNION, INTERSECTION, MINUS clause | <b>10</b> |
| <b>Unit-4</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |           |
| <b>INTRODUCTION TO PL/SQL:</b> Advantages of PL/SQL, The Generic PL/SQL Block, PL/SQL- The character set, Literals, PL/SQL datatypes, variables, Logical comparisons, Displaying User Messages on The VDU Screen, comments.<br>Control Structure - Conditional Control, Iterative Control<br><b>PL/SQL Transactions:</b> Cursor-Types of Cursor, Cursor Attributes. Explicit cursor- Explicit cursor Management, cursor for loop<br><b>PL/SQL Database Objects:</b> Procedures and Functions, Oracle Packages, Error Handling in PL/SQL.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          | <b>10</b> |

### Text Book:

1. Fundamentals of Database Systems, Ramez Elamassri, Shankant B. Navathe, 7th Edition, Pearson, 2015

### Reference Books:

2. An Introduction to Database Systems, Bipin Desai, Galgotia Publications, 2010.
3. Introduction to Database System, C J Date, Pearson, 1999.
4. Database Systems Concepts, Abraham Silberschatz, Henry Korth, S.Sudarshan, 6th Edition, McGraw Hill, 2010.
5. Database Management Systems, Raghu Rama Krishnan and Johannes Gehrke, 3rd Edition, McGraw Hill, 2002

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|-----------------------------------------------|--------------------------------|
| <b>Course Title: C# and Dot Net Framework</b> | Course code: 21BCA3C8L         |
| Total Contact Hours: 42                       | Course Credits: 03+02          |
| Formative Assessment Marks: 40                | Duration of SEE/Exam: 02 Hours |
| Summative Assessment Marks: 60                |                                |

### Course Outcomes (COs):

**At the end of the course, students will be able to:**

- Understand Object Oriented Programming concepts like Inheritance and Polymorphism in C# programming language.
- Interpret and Develop Interfaces for real-time applications.
- Build custom collections and generics in C#.

### DSC8: C# and Dot Net Framework

| Contents                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   | Hours     |
|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------|
| <b>Unit-1</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |           |
| <b>Introduction to .Net Technologies:</b> Introduction to Web Technologies. HTML Basics, Scripts. Sample Programs. Advantages and Disadvantages of Client-side and Server-side Scripts. Overview of Client-side Technologies and Server-side Technologies.<br><b>Introduction to C#:</b> Overview of C#, Literals, Variables, Data Types, Operators, Expressions, Control Structures-Methods, Arrays, Strings, Structures, Enumerations                                                                                                    | <b>11</b> |
| <b>Unit-2</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |           |
| <b>OOPS with C#:</b> Classes, Objects, Inheritance, Polymorphism, Interfaces, Operator Overloading Delegates, Events, Errors and Exceptions.<br><b>Introduction to VB.NET:</b> Introduction, VB.NET -IDE – Start page, menu system, tool bars, New project dialog box, graphical designers, code designers, Intellisense, object browser, Toolbox, Solution explorer, property window, dynamic help window, component tray, server explorer, output window, task list, command window                                                      | <b>11</b> |
| <b>Unit-3</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |           |
| <b>VB.NET Language:</b> Basic Keywords. Data Types. VB.NET statements. Conditional statements: If Else, Select Case, Switch and Choose Loops: Do, For Next, For Each Next, While loop. Arrays. Subroutines and Functions in VB.NET.<br><br><b>Application Development on .NET: Vb.NET:</b> Windows Forms. <b>Working with Controls-</b> Textbox, Label, Button Timer, Picture-box, Group-box, Listbox , Combo-box, Horizontal and Vertical Scrollbar, Numeric-up-down, Track-bar, and Progress-bar. Building Windows Applications using C# | <b>10</b> |
| <b>Unit-4</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |           |
| <b>Data Access Connectivity: ADO.NET:</b> Introduction to ADO.NET, ADO vs ADO.NET Architecture: Data reader, Data adapter, Accessing Data with ADO.NET. Binding Controls to Databases: Various ways to bind the data, simple binding, complex binding, binding data to control. Programming Web Applications with Web Forms. Web Controls in C#, ASP.NET applications with ADO.NET.                                                                                                                                                        | <b>10</b> |

### References:

1. "Programming in C#", E. Balagurusamy, 4th Edition, Tata McGraw-Hill, 2017.
2. "Visual Basic.NET", Shirish Chavan, 3rd Edition, Pearson Education, 2009.
3. "ASP.NET and VB.NET Web Programming", Matt J. Crouch, Edition 2012.
4. "Computing with C# and the .NET Framework", Arthur Gittleman, 2nd Edition, Jones & Bartlett Publishers, 2011

|                                                                    |                                |
|--------------------------------------------------------------------|--------------------------------|
| <b>Course Title:</b><br><b>Computer Communication and Networks</b> | Course code: 21BCA3C9L         |
| Total Contact Hours: 42                                            | Course Credits: 03             |
| Formative Assessment Marks: 40                                     | Duration of SEE/Exam: 02 Hours |
| Summative Assessment Marks: 60                                     |                                |

#### Course Outcomes (COs):

At the end of the course, students will be able to:

- Explain the transmission technique of digital data between two or more computers and a computer network that allows computers to exchange data.
- Apply the basics of data communication and various types of computer networks in real world applications.
- Compare the different layers of protocols.
- Compare the key networking protocols and their hierarchical relationship in the conceptual model like TCP/IP and OSI.

### DSC9: Computer Communication and Networks

| Contents                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            | Hours     |
|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------|
| <b>Unit-1</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |           |
| <b>Introduction: Uses of Computer Networks and its Applications:</b> Business Applications, Home Applications, Mobile Users, Social Issues.<br><b>Network Hardware</b> -Local Area Networks, Metropolitan Area Networks, Wide Area Networks, Internetworks.<br><b>Reference Models</b> -The OSI Reference Model, The TCP/IP Reference Model, A Comparison of the OSI and TCP Reference Models.                                                                                                                                                                                                                                                                                                                                                                                                                      | <b>11</b> |
| <b>Unit-2</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |           |
| <b>The Physical Layer: Transmission Media</b> - Twisted Pair, Coaxial Cable, and Fiber Optics.<br><b>Wireless Transmission</b> - Radio Transmission, Microwave Transmission, Infrared, Light Transmission. Multiplexing-Frequency division, time division, code division, Switching.<br><b>The Data Link Layer:</b> Data link layer design issues-Services Provided to the Network Layer, Framing, Error Control, and Flow Control. Error Detection and Correction-Error-Correcting Codes, Error -Detecting Codes. Elementary Data Link Protocols-An Unrestricted Simplex Protocol, A Simplex Stop-and-Wait Protocol for an Error-Free Channel, A Simplex Protocol for a Noisy Channel. Sliding Window Protocols -A One Bit Sliding Window Protocol, A Protocol Using Go back n, A Protocol using Selective Repeat. | <b>11</b> |
| <b>Unit-3</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |           |
| <b>The Network Layer:</b> Network layer design issues-Store-and-Forward Packet Switching, Services Provided to the Transport Layer, Implementation of Connectionless Service, Implementation of Connection-Oriented Service, Comparison of Virtual Circuit and Datagram Networks. Routing Algorithms-Flooding, Distance Vector Routing, Link State Routing, Hierarchical Routing, Broadcast Routing, Multicast Routing, Anycast Routing. Congestion Control Algorithms-Approaches to Congestion Control, Approaches to Congestion                                                                                                                                                                                                                                                                                   | <b>10</b> |

|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |           |
|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------|
| Control, Admission Control. The network layer in the Internet-The IP Version 4 Protocol, IP Address, IP Version 6, Internet Control Protocol, The Interior Gateway Routing Protocol: OSPF, The Exterior Gateway Routing Protocol: BGP.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |           |
| <b>Unit-4</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |           |
| <p><b>The Transport Layer:</b> The Transport Service-Services Provided to the Upper Layers. Elements of Transport Protocols-Addressing, Connection Establishment, connection Release, Error control and Flow Control. The Internet Transport Protocols-(TCP and UDP)-UDP- Introduction to UDP, Remote Procedure Call, Real-Time Transport Protocols, TCP- Introduction to TCP, The TCP Service Model, The TCP Protocol, The TCP Segment Header, TCP Connection Establishment, TCP Connection Release, TCP Connection Management Modeling, TCP Sliding Window,</p> <p><b>The Application Layer:</b> DNS – Domain Name System-The DNS Name Space, Domain Resource Records, Name Servers. Electronic Mail-Architecture and Services, The User Agent, Message Formats, Message Transfer, Final Delivery, The World Wide Web- Architectural Overview,Static Web Pages, Dynamic Web Pages and Web Applications, HTTP—The HyperText Transfer Protocol</p> | <b>10</b> |

### Text Book:

1. Computer Networks, Andrew S. Tanenbaum, 5th Edition, Pearson Education, 2010.

### Reference Books:

1. Data Communication & Networking, Behrouza A Forouzan, 3rd Edition, Tata McGraw Hill, 2001.
2. Data and Computer Communications, William Stallings, 10th Edition, Pearson Education, 2017.
3. Data Communication and Computer Networks, Brijendra Singh, 3rd Edition, PHI, 2012.
4. Data Communication & Network, Dr. Prasad, Wiley Dreamtech.
5. <http://highered.mheducation.com/sites/0072967757/index.htmls>

## Semester: IV

|                                  |                                |
|----------------------------------|--------------------------------|
| Course Title: Python Programming | Course code: 21BCA3C10L        |
| Total Contact Hours: 42          | Course Credits: 03+02          |
| Formative Assessment Marks: 40   | Duration of SEE/Exam: 02 Hours |
| Summative Assessment Marks: 60   |                                |

### Course Outcomes (COs):

At the end of the course, students will be able to:

- Explain the basic concepts of Python Programming.
- Demonstrate proficiency in the handling of loops and creation of functions.
- Identify the methods to create and manipulate lists, tuples and dictionaries.
- Discover the commonly used operations involving file handling.
- Interpret the concepts of Object-Oriented Programming as used in Python.
- Develop the emerging applications of relevant fields using Python.

## DSC10: Python Programming

| Contents                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               | Hours     |
|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------|
| <b>Unit-1</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |           |
| <b>Introduction to Features and Applications of Python;</b> Python Versions; Installation of Python; Python Command Line mode and Python IDEs; Simple Python Program.<br><b>Python Basics:</b> Identifiers; Keywords; Statements and Expressions; Variables; Operators; Precedence and Association; Data Types; Indentation; Comments; Built-in Functions- Console Input and Console Output, Type Conversions; Python Libraries; Importing Libraries with Examples.<br><b>Python Control Flow:</b> Types of Control Flow; Control Flow Statements- if, else, elif, while loop, break, continue statements, for loop Statement; range () and exit () functions.<br><b>Exception Handling:</b> Types of Errors; Exceptions; Exception Handling using try, except and finally. Python Functions: Types of Functions; Function Definition- Syntax, Function Calling, Passing Parameters/arguments, the return statement; Default Parameters; Command line Arguments; Key Word Arguments; Recursive Functions; Scope and Lifetime of Variables in Functions | <b>11</b> |
| <b>Unit-2</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |           |
| <b>Strings:</b> Creating and Storing Strings; Accessing String Characters; the str() function; Operations on Strings- Concatenation, Comparison, Slicing and Joining, Traversing; Format Specifiers; Escape Sequences; Raw and Unicode Strings; Python String Methods.<br><b>Lists:</b> Creating Lists; Operations on Lists; Built-in Functions on Lists; Implementation of Stacks and Queues using Lists; Nested Lists.<br><b>Dictionaries:</b> Creating Dictionaries; Operations on Dictionaries; Built-in Functions on Dictionaries; Dictionary Methods; Populating and Traversing Dictionaries. <b>Tuples and Sets:</b> Creating Tuples; Operations on Tuples; Built-in                                                                                                                                                                                                                                                                                                                                                                            | <b>11</b> |

|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |           |
|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------|
| Functions on Tuples; Tuple Methods; Creating Sets; Operations on Sets; Built-in Functions on Sets; Set Methods.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |           |
| <b>Unit-3</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |           |
| <b>File Handling:</b> File Types; Operations on Files– Create, Open, Read, Write, Close Files; File Names and Paths; Format Operator.<br><b>Object Oriented Programming:</b> Classes and Objects; Creating Classes and Objects; Constructor Method; Classes with Multiple Objects; Objects as Arguments; Objects as Return Values; Inheritance- Single and Multiple Inheritance, Multilevel and Multipath Inheritance; Encapsulation- Definition, Private Instance Variables; Polymorphism- Definition, Operator Overloading.<br><b>GU Interface:</b> The tkinter Module; Window and Widgets; Layout Management- pack, grid and place                    | <b>10</b> |
| <b>Unit-4</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |           |
| <b>Python SQLite:</b> The SQLite3 module; SQLite Methods- connect, cursor, execute, close; Connect to Database; Create Table; Operations on Tables Insert, Select, Update. Delete and Drop Records.<br><b>Data Analysis:</b> NumPy- Introduction to NumPy, Array Creation using NumPy, Operations on Arrays; Pandas- Introduction to Pandas, Series and DataFrames, Creating DataFrames from Excel Sheet and .csv file, Dictionary and Tuples. Operations on DataFrames.<br><b>Data Visualisation:</b> Introduction to Data Visualisation; Matplotlib Library; Different Types of Charts using Pyplot- Line chart, Bar chart and Histogram and Pie chart | <b>10</b> |

#### References:

1. Think Python How to Think Like a Computer Scientist, Allen Downey et al., 2<sup>nd</sup> Edition, Green Tea Press. Freely available online @ <https://www.greenteapress.com/thinkpython/thinkCSpy.pdf>, 2015.
2. Introduction to Python Programming, Gowrishankar S et al., CRC Press, 2019.
3. Python Data Analytics: Data Analysis and Science Using Pandas, matplotlib, and the Python Programming Language, Fabio Nelli, Apress®, 2015
4. Advance Core Python Programming, MeenuKohli, BPB Publications, 2021.
5. Core PYTHON Applications Programming, Wesley J. Chun, 3rd Edition, Prentice Hall, 2012.
6. Automate the Boring Stuff, Al Sweigart, No Starch Press, Inc, 2015.
7. Data Structures and Program Design Using Python, D Malhotra et al., Mercury Learning and Information LLC, 2021.
8. <http://www.ibiblio.org/g2swap/byteofpython/read/>
9. <https://docs.python.org/3/tutorial/index.html>

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|--------------------------------------------------------------------|--------------------------------|
| <b>Course Title:</b><br><b>Computer Multimedia &amp; Animation</b> | Course code: 21BCA3C11L        |
| Total Contact Hours: 42                                            | Course Credits: 03+02          |
| Formative Assessment Marks: 40                                     | Duration of SEE/Exam: 02 Hours |
| Summative Assessment Marks: 60                                     |                                |

#### Course Outcomes (COs):

At the end of the course, students will be able to:

- Write a well-designed, interactive Web site with respect to current standards and practices.
- Demonstrate in-depth knowledge of an industry-standard multimedia development tool and its associated scripting language.
- Determine the appropriate use of interactive versus standalone Web applications.

### DSC11: Computer Multimedia & Animation

| Contents                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        | Hours     |
|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------|
| <b>Unit-1</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |           |
| <b>Web Design:</b> Origins and evolution of HTML, Basic syntax, Basic text markup, Images, Lists, Tables, Forms, Frame, Overview and features of HTML5.<br><b>CSS:</b> Introduction, Levels of style sheets, Style specification formats, Selector forms, Property value forms, Font properties, List properties, Color, Alignment of text, The and tags; Overview and features of CSS3.<br><b>JavaScript:</b> Object orientation and JavaScript; General syntactic characteristics; Primitives, operations, and expressions; Screen output and keyboard input. | <b>11</b> |
| <b>Unit-2</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |           |
| <b>Animation:</b> Introduction, Start and End States, Interpolation, Animations in HTML. All About CSS Animations, Creating a Simple Animation, Detailed Look at the CSS Animation Property, Keyframes, Declaring Multiple Animations, Wrap-up. All About CSS Transitions, Adding a Transition, Looking at Transitions in Detail, The Longhand Properties, Longhand Properties vs. Shorthand Properties, Working with Multiple Transitions.                                                                                                                     | <b>11</b> |
| <b>Unit-3</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |           |
| <b>HTML5 – SVG:</b> Viewing SVG Files, Embedding SVG in HTML5, HTML5 – SVG Circle, HTML5 – SVG Rectangle, HTML5 – SVG Line, HTML5 – SVG Ellipse, HTML5 – SVG Polygon, HTML5 – SVG Polyline, HTML5 – SVG Gradients, HTML5 – SVG Star                                                                                                                                                                                                                                                                                                                             | <b>10</b> |
| <b>Unit-4</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |           |
| <b>HTML5 – CANVAS:</b> The Rendering Context, Browser Support, HTML5 Canvas Examples, Canvas - Drawing Rectangles, Canvas - Drawing Paths, Canvas - Drawing Lines, Canvas - Drawing Bezier Curves, Canvas - Drawing Quadratic Curves, Canvas - Using Images, Canvas - Create Gradients, HTML5 - Styles and Colors, Canvas - Text and Fonts, Canvas - Pattern and Shadow, Canvas - Save and Restore States, Canvas - Translation, Canvas - Rotation, Canvas - Scaling, Canvas - Transforms, HTML5 Canvas - Composition, Canvas – Animations.                     | <b>10</b> |

#### References:

1. The Complete Reference HTML and CSS, 5th Edition, Thomas A Powell, 2017.
2. Animation in HTML, CSS, and JavaScript, KirupaChinnathambi, 1st Edition, Createspace Independent Pub, 2013.
3. <https://www.w3.org/Style/CSS/current-work#CSS3>
4. <http://bedford-computing.co.uk/learning/cascading-style-sheets-css/>



|                                                |                                |
|------------------------------------------------|--------------------------------|
| <b>Course Title: Operating System Concepts</b> | Course code: 21BCA3C12L        |
| Total Contact Hours: 42                        | Course Credits: 03             |
| Formative Assessment Marks: 40                 | Duration of SEE/Exam: 02 Hours |
| Summative Assessment Marks: 60                 |                                |

### Course Outcomes (COs):

At the end of the course, students will be able to:

- Understand the fundamentals of the operating system.
- Comprehend multithreaded programming, process management, process synchronization, memory management and storage management.
- Compare the performance of Scheduling Algorithms
- Identify the features of I/O and File handling methods.

### DSC12: Operating System Concepts

| Contents                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              | Hours     |
|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------|
| <b>Unit-1</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |           |
| <b>Introduction to Operating System:</b> Definition, History and Examples of Operating System; Types of Operating Systems; Functions of Operating System; Systems Calls; Operating System Structure.<br><br><b>File System:</b> File Concepts- Attributes, Operations and Types of Files; File System; File Access methods; Directory Structure; Protection; File System Implementation- File System Structure, Allocation Methods, Free Space Management.                                                                                                            | <b>10</b> |
| <b>Unit-2</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |           |
| <b>Memory Management:</b> Logical and Physical Address Space; Swapping; Contiguous Allocation; Paging; Segmentation; Segmentation with Paging.<br><b>Virtual Memory:</b> Introduction to Virtual Memory; Demand Paging; Page Replacement; Page Replacement Algorithms; Allocation of frames, Thrashing<br><b>Disk Scheduling (I/O Management):</b> Introduction and Scheduling Algorithm                                                                                                                                                                              | <b>10</b> |
| <b>Unit-3</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |           |
| <b>Process Management:</b> Process Concept- Process Definition, Process State, Process Control Block, Threads; Process scheduling- Multiprogramming, Scheduling Queues, CPU Scheduling, Context Switch; Operations on Processes- Creation and Termination of Processes; Inter process communication (IPC)- IPC Implementation Methods- Shared Memory and Message Passing;<br><b>CPU Scheduling:</b> Basic concepts; Scheduling Criteria; Scheduling Algorithms; Multiple-processor scheduling; Thread scheduling; Multiprocessor Scheduling; Real-Time CPU Scheduling | <b>11</b> |
| <b>Unit-4</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |           |
| <b>Process Synchronization:</b> Introduction; Race Condition; Critical Section Problem and Peterson's Solution; Synchronization Hardware, Semaphores; Classic Problems of Synchronization- Readers and Writers Problem, Dining                                                                                                                                                                                                                                                                                                                                        |           |

|                                                                                                                                                                                                                                                                                                                                                                                                            |           |
|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------|
| Philosophers Problem; Monitors.<br><b>Deadlocks:</b> System Model; Deadlocks Characterization; Methods for Handling Deadlocks; Deadlock Prevention; Deadlock Avoidance; Deadlock Detection; and Recovery from Deadlock.<br><b>Multithreaded Programming:</b> Introduction to Threads; Types of Threads; Multithreading- Definition, Advantages; Multithreading Models; Thread Libraries; Threading Issues. | <b>11</b> |
|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------|

### **Text Book:**

1. Operating System Concepts, Silberschatz' et al., 10th Edition, Wiley, 2018.

### **Reference Books:**

2. Operating System Concepts - Engineering Handbook, Ghosh PK, 2019.
3. Understanding Operating Systems, McHoes A et al., 7th Edition, Cengage Learning, 2014.
4. Operating Systems - Internals and Design Principles, William Stallings, 9th Edition, Pearson.
5. Operating Systems – A Concept Based Approach, Dhamdhere, 3rd Edition, McGraw Hill Education India.
6. Modern Operating Systems, Andrew S Tanenbaum, 4th Edition, Pearson

## Skill Enhancement Course: SEC for other Programmes

### Semester: III

|                                                                   |                                      |
|-------------------------------------------------------------------|--------------------------------------|
| <b>Course Title: Artificial Intelligence</b>                      | Course Credits: 2                    |
| Total Contact Hours: 13 hours of theory and 26 hours of practical | Duration of SEE: 01 Hour             |
| Formative Assessment Marks: 20 marks                              | Summative Assessment Marks: 30 marks |

### Course Outcomes (COs):

At the end of the course, students will be able to:

- Appraise the theory of Artificial intelligence and list the significance of AI.
- Discuss the various components that are involved in solving an AI problem.
- Illustrate the working of AI Algorithms in the given contrast.
- Analyze the various knowledge representation schemes, Reasoning and Learning techniques of AI.
- Apply the AI concepts to build an expert system to solve the real-world problems.

### Course Content

| Contents                                                                                                                                                                                                                                                                                                                                      | Hours     |
|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------|
| <b>Unit-1</b>                                                                                                                                                                                                                                                                                                                                 |           |
| <b>Overview of AI:</b> Definition of Artificial Intelligence, Philosophy of AI, Goals of AI, Elements of AI system, Programming a computer without and with AI, AI Techniques, History of AI.<br><b>Intelligent Systems:</b> Definition and understanding of Intelligence, Types of Intelligence, Human Intelligence vs Machine Intelligence. | <b>05</b> |
| <b>Unit-2</b>                                                                                                                                                                                                                                                                                                                                 |           |
| <b>AI Applications:</b> Virtual assistance, Travel and Navigation, Education and Healthcare, Optical character recognition, E-commerce and mobile payment systems, Image based search and photo editing.<br><b>AI Examples in daily life:</b> Installation of AI apps and instructions to use AI apps.                                        | <b>05</b> |
| <b>Unit-3</b>                                                                                                                                                                                                                                                                                                                                 |           |
| <b>Robotics:</b> Introduction to Robotics, Difference in Robot System and Other AI Program, Components of a Robot.                                                                                                                                                                                                                            | <b>03</b> |

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|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------|
| <b>Laboratory Activities:</b> <ul style="list-style-type: none"> <li>• Amazon Alexa:<br/> <a href="https://play.google.com/store/apps/details?id=com.amazon.dee.app&amp;hl=en&amp;am p;gl=US">https://play.google.com/store/apps/details?id=com.amazon.dee.app&amp;hl=en&amp;am p;gl=US</a> </li> <li>• Google Lens:<br/> <a href="https://play.google.com/store/search?q=google+lens&amp;c=apps&amp;hl=en&amp;gl=US">https://play.google.com/store/search?q=google+lens&amp;c=apps&amp;hl=en&amp;gl=US</a> </li> <li>• Image to Text to Speech ML OCR:<br/> <a href="https://play.google.com/store/apps/details?id=com.mlscanner.image.text.speech&amp; hl=en_IN&amp;gl=US">https://play.google.com/store/apps/details?id=com.mlscanner.image.text.speech&amp; hl=en_IN&amp;gl=US</a> </li> <li>• Google Pay:<br/> <a href="https://play.google.com/store/apps/details?id=com.google.android.apps.nb u.paisa .user&amp;hl=en_IN&amp;gl=US">https://play.google.com/store/apps/details?id=com.google.android.apps.nb u.paisa .user&amp;hl=en_IN&amp;gl=US</a> </li> </ul> | <b>26</b> |
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|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--|
| <ul style="list-style-type: none"> <li>•Grammarly:<br/><a href="https://play.google.com/store/search?q=grammarly&amp;c=apps&amp;hl=en_IN&amp;gl=">https://play.google.com/store/search?q=grammarly&amp;c=apps&amp;hl=en_IN&amp;gl=</a></li> <li>• Google Map:<br/><a href="https://play.google.com/store/search?q=google+maps&amp;c=apps&amp;hl=en&amp;gl=US">https://play.google.com/store/search?q=google+maps&amp;c=apps&amp;hl=en&amp;gl=US</a></li> <li>•FaceApp:<br/><a href="https://play.google.com/store/apps/details?id=io.faceapp&amp;hl=en_IN&amp;gl=US">https://play.google.com/store/apps/details?id=io.faceapp&amp;hl=en_IN&amp;gl=US</a></li> <li>• Socratic:<br/><a href="https://play.google.com/store/apps/details?id=com.google.socratic&amp;hl=en_IN&amp;gl=US">https://play.google.com/store/apps/details?id=com.google.socratic&amp;hl=en_IN&amp;gl=US</a></li> <li>• Google Fit: Activity Tracking:<br/><a href="https://play.google.com/store/apps/details?id=com.google.android.apps.fitness&amp;hl=en_IN&amp;gl=US">https://play.google.com/store/apps/details?id=com.google.android.apps.fitness&amp;hl=en_IN&amp;gl=US</a></li> <li>• SwiftKey Keyboard:<br/><a href="https://swiftkey-keyboard.en.uptodown.com/android">https://swiftkey-keyboard.en.uptodown.com/android</a></li> <li>• E-commerce App:<br/><a href="https://play.google.com/store/apps/details?id=com.jpl.jiomart&amp;hl=en_IN&amp;gl=US">https://play.google.com/store/apps/details?id=com.jpl.jiomart&amp;hl=en_IN&amp;gl=US</a></li> </ul> |  |
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### Text Book:

1. Wolfgang Ertel, "Introduction to Artificial Intelligence", 2nd Edition, Springer International Publishing 2017.
2. Michael Negnevitsky, "Artificial Intelligence A Guide to Intelligent Systems", 2nd Edition, Pearson Education Limited 2005.

### Reference Books:

1. [https://www.tutorialspoint.com/artificial\\_intelligence/artificial\\_intelligence\\_tutorial.pdf](https://www.tutorialspoint.com/artificial_intelligence/artificial_intelligence_tutorial.pdf)
2. Kevin Knight, Elaine Rich, Shivashankar B. Nair, "Artificial Intelligence", 3rd Edition, July 2017.

### Reference Links:

1. Voice Assistant: <https://alan.app/blog/voiceassistant-2/>
2. Browse with image: <https://www.pocket-lint.com/apps/news/google/141075-what-is-google-lens-and-how-does-it-work-and-which-devices-have-it>
3. OCR: <https://aws.amazon.com/what-is/ocr/>
4. Mobile Payment system: <https://gocardless.com/en-us/guides/posts/how-do-mobilepayment-systems-work/>
5. Grammarly: <https://techjury.net/blog/how-to-use-grammarly/#gref>
6. Travel & Navigation: <https://blog.google/products/maps/google-maps-101-ai-powernew-features-io-2021/>
7. AI in photo editing: <https://digital-photography-school.com/artificial-intelligencechanged-photo-editing/>
8. AI in education: <https://www.makeuseof.com/what-is-google-socratic-how-does-itwork/>
9. AI in health and fitness: <https://cubettech.com/resources/blog/implementing-machinelearning-and-ai-in-health-and-fitness/>
10. E-commerce and online shopping: <https://medium.com/@nyxonedigital/importanceof-e-commerce-and-online-shopping-and-why-to-sell-online-5a3fd8e6f416>

# Question Paper Pattern for Skill Enhancement Course

## Artificial Intelligence

Duration: 1 Hour

Max. Marks: 30

### Part-A

(This section shall contain four questions from each module. Each question carries one mark)

#### Module-1:

- 1.
- 2.
- 3.
- 4.

#### Module-2:

- 5.
- 6.
- 7.
- 8.

#### Module-3:

- 9.
- 10.
- 11.
- 12.

### Part-B

(This section shall contain two full questions from each module having an internal choice. Each full question carries six marks)

#### Module-1:

(a) Six mark question with sub-questions **OR** (b) Six mark question with sub-questions

#### Module-2:

(a) Six mark question with sub-questions **OR** (b) Six mark question with sub-questions

#### Module-3:

(a) Six mark question with sub-questions **OR** (b) Six mark question with sub-questions

### Open Elective for III Semester: Programming in C

|                                                          |                               |
|----------------------------------------------------------|-------------------------------|
| <b>Course Title:</b><br><b>Programming in C Concepts</b> | Course Credits: 3 (3L+0T+0P)  |
| Semester: III                                            | Duration of SEE: 02 Hours     |
| Total Contact Hours: 42                                  | SEE: 60 Marks<br>IA: 40 Marks |

#### Course Outcomes (COs):

After completing this course satisfactorily, a student will be able to:

- Read, understand and trace the execution of programs written in C language
- Write the C code for a given problem
- Perform input and output operations using programs in C
- Write programs that perform operations on arrays
- Understand functions and file concepts of C language

#### Course Contents:

| Contents                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            | Hours     |
|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------|
| <b>Unit-1</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |           |
| <b>Overview of C:</b> Importance of C Program, Basic structure of a C-program, Execution of a C Program.<br><b>C Programming Basic Concepts:</b> Character set, Tokens, Keywords, Constants, Symbolic constants, Variables, Data types,<br><b>Input and output with C:</b> Formatted I/O functions – <i>printf</i> and <i>scanf</i> , control stings and escape sequences, output specifications with <i>printf</i> functions; Unformatted I/O functions to read and display single character and astring- <i>getchar</i> , <i>putchar</i> , <i>gets</i> and <i>puts</i> functions. | <b>11</b> |
| <b>Unit-2</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |           |
| <b>Operators &amp; Expressions:</b> Arithmetic operators; Relational operators; Logical operators; Assignment operators; Increment & Decrement operators; Bitwise operators; Conditional operator; Operator Precedence and Associativity; Evaluation of arithmetic expressions;<br><b>Control Structures:</b> Decision Making and Branching -Decision making with if statement, simple if statement, the if else statement, nesting of if...else statements, the else if ladder, the switch statement, ?: operator, the go to statement.                                            | <b>11</b> |
| <b>Unit-3</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |           |
| <b>Looping Structures:</b> Decision making and looping - The while statement, the do statement, for statement, nested loops, exit, break, Jumps in loops.<br><b>Derived data types in C:</b> Arrays-declaration, initialization and access of one-dimensional and two-dimensional arrays.                                                                                                                                                                                                                                                                                           | <b>10</b> |

| Unit -4                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |    |
|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----|
| <p><b>Handling of Strings:</b> Declaring and initializing string variables, reading strings from terminal, writing strings to screen, String handling functions - <i>strlen</i>, <i>strcmp</i>, <i>strcpy</i>, <i>strstr</i> and <i>strcat</i>; Character handling functions - <i>tolower</i>, <i>toupper</i>, <i>isalpha</i>, <i>isnumeric</i>.</p> <p><b>Functions:</b> Basics of functions, Parameter Passing, Simple functions</p> <p><b>File handling:</b> Basics of file programming concepts- <i>fprintf</i> and <i>fscanf</i>, and example programs</p> | 10 |

**Text Book:**

1. E.Balagurusamy, Programming in ANSI C ,7<sup>th</sup> Edition, Tata McGraw Hill

**Reference Books:**

2. Herbert Scheldt, C: The Complete Reference, 4<sup>th</sup> Edition.
3. Brian W. Kernighan and Dennis Ritchie, The C Programming Language, Second Edition.

## Open Elective for III Semester: R Programming

|                                    |                               |
|------------------------------------|-------------------------------|
| <b>Course Title: R PROGRAMMING</b> | Course Credits: 3 (3L+0T+0P)  |
| <b>Semester: III</b>               | Duration of SEE: 02 Hours     |
| Total Contact Hours: 42            | SEE: 60 Marks<br>IA: 40 Marks |

### Course Outcomes (COs):

- Understand the basics of Fundamentals of R.
- Understands the loading, retrieval techniques of data.
- Understand how data is analyzed and visualized using statistic functions.

### Course Contents:

| Contents                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     | Hours     |
|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------|
| <b>Unit-1</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |           |
| <b>Introduction to R:</b> Basics, Advantages of R over Other Programming Languages - R Studio: R command Prompt, R script file, Comments – Handling Packages in R: Installing R Package, Commands: installed.packages(), package Description(), help(), find. Package (), library() - Input and Output – Entering Data from keyboard – Printing fewer digits or more digits – Special Values functions : NA, Inf and -inf.<br><b>R Data Types:</b> Vectors, Lists, Matrices, Arrays, Factors, Data Frame<br><b>R - Variables:</b> Variable assignment, Data types of Variable, Finding Variable Is(), Deleting Variables.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    | <b>11</b> |
| <b>Unit-2</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |           |
| <b>R Operators:</b> Arithmetic Operators, Relational Operators, Logical Operator, Assignment Operators, Miscellaneous Operators<br><b>R Decision Making:</b> if statement, if – else statement, if – else if statement, switch statement<br><b>R Loops:</b> repeat loop, while loop, for loop - Loop control statement: break statement, next statement.<br><b>R-Functions</b> : function definition, Built in functions: mean(), paste(), sum(), min(), max(), seq(), user-defined function, calling a function, calling a function without an argument, calling a function with argument values<br><b>R-Strings</b> – Manipulating Text in Data: substr(), strsplit(), paste(), grep(), toupper(), tolower()<br><b>R Vectors</b> – Sequence vector, rep function, vector access, vector names, vector math, vector recycling, vector element sorting<br><b>R List</b> - Creating a List, List Tags and Values, Add/Delete Element to or from a List, Size of List, Merging Lists, Converting List to Vector<br><b>R Matrices</b> – Accessing Elements of a Matrix, Matrix Computations: Addition, subtraction, Multiplication and Division | <b>11</b> |



| Unit-3                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |    |
|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----|
| <b>R Arrays:</b> Naming Columns and Rows, Accessing Array Elements, Manipulating Array Elements, Calculation Across Array Elements<br><b>R Factors</b> –creating factors, generating factor levels gl().<br><b>Data Frames</b> –Create Data Frame, Data Frame Access, Understanding Data in Data Frames: dim(), nrow(), ncol(), str(), Summary(), names(), head(), tail(), edit() functions - Extract Data from Data Frame<br><b>Expand Data Frame:</b> Add Column, Add Row - Joining columns and rows in a Data frame rbind() and cbind() – Merging Data frames merge() – Melting and Casting data melt(), cast(). | 10 |
| Unit-4                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |    |
| <b>Loading and handling Data in R: Getting and Setting the Working Directory</b> – getwd(), setwd(), dir()<br><b>R-CSV Files</b> - Input as a CSV file, Reading a CSV File, Analyzing the CSV File: summary(), min(), max(), range(), mean(), median(), apply() - Writing into a CSV File<br><b>R -Excel File</b> – Reading the Excel file.                                                                                                                                                                                                                                                                         | 10 |

### Text Book:

1. Sandip Rakshit, R Programming for Beginners, McGraw Hill Education (India), 2017, ISBN : 978-93-5260-455-5.

### Reference Books:

2. Seema Acharya, Data Analytics using R, McGrawHill Education (India), 2018, ISBN: 978-93-5260-524-8.
3. Tutorials Point (I) simply easy learning, Online Tutorial Library (2018), R Programming, Retrieved from [https://www.tutorialspoint.com/r/r\\_tutorial.pdf](https://www.tutorialspoint.com/r/r_tutorial.pdf).
4. Andrie de Vries, JorisMeys, R for Dummies A Wiley Brand, 2nd Edition, John Wiley and Sons, Inc, 2015, ISBN: 978-1-119-05580-8.

## Open Elective for IV Semester: Python Programming Concepts

|                                                            |                               |
|------------------------------------------------------------|-------------------------------|
| <b>Course Title:</b><br><b>Python Programming Concepts</b> | Course Credits: 3 (3L+0T+0P)  |
| Semester: IV                                               | Duration of SEE: 02 Hours     |
| Total Contact Hours: 42                                    | SEE: 60 Marks<br>IA: 40 Marks |

### Course Outcomes (COs):

- Explain the basic concepts of Python Programming.
- Demonstrate proficiency in handling of loops and the creation of functions.
- Identify the methods to create and manipulate string data types.
- Understand the notion of arrays, lists, tuples and their applications

### Course contents:

| Contents                                                                                                                                                                                                                                                                                                                                                                                                        | Hours     |
|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------|
| <b>Unit-1</b>                                                                                                                                                                                                                                                                                                                                                                                                   |           |
| <b>Introduction to Features and Applications of Python;</b> Python Versions; Installation of Python; Python Command Line mode and Python IDEs; Simple Python Program. Identifiers; Keywords; Statements and Expressions; Variables; Operators; Precedence and Association; Data Types; Indentation; Comments;                                                                                                   | <b>10</b> |
| <b>Unit-2</b>                                                                                                                                                                                                                                                                                                                                                                                                   |           |
| Built-in Functions- Console Input and Console Output, Type Conversions; Python Libraries; Importing Libraries with Examples; Illustrative programs; Libraries for graphics and image handling.<br><b>Python Control Flow:</b> Types of Control Flow; Control Flow Statements- if, else, elif, while loop, break, continue statements, for loop Statement; range() and exit () functions; Illustrative programs. | <b>10</b> |
| <b>Unit-3</b>                                                                                                                                                                                                                                                                                                                                                                                                   |           |
| <b>Strings:</b> Creating and Storing Strings; Accessing Sting Characters; the str() function; Operations on Strings- Concatenation, Comparison, Slicing and Joining, Traversing; Format Specifiers; Escape Sequences; Raw and Unicode Strings; Python String Methods; Illustrative programs.<br><b>Other data types:</b> Basics of arrays, lists, tuples and related functions                                  | <b>11</b> |
| <b>Unit-4</b>                                                                                                                                                                                                                                                                                                                                                                                                   |           |
| <b>Python Functions:</b> Types of Functions; Function Definition- Syntax, Function Calling, Passing Parameters/arguments, the return statement; Default Parameters; Command line Arguments; Key Word Arguments; Illustrative programs                                                                                                                                                                           | <b>11</b> |

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## **Text Book:**

1. Python Programming: Using Problem Solving Approach, Reema Thareja, June 2017.

## **Reference Books:**

1. Learning with Python, Allen Downey, Jeffrey Elkner, Chris Meyers, 2015  
(Freely available online 2015.  
@<https://www.greenteapress.com/thinkpython/thinkCSpy.pdf>)
2. Introduction to Python Programming, Gowrishankar S et al., CRC Press, 2019.
3. <http://www.ibiblio.org/g2swap/byteofpython/read/>
4. [http://scipy-lectures.org/intro/language/python\\_language.html](http://scipy-lectures.org/intro/language/python_language.html)
5. <https://docs.python.org/3/tutorial/index.html>

## Open Elective for IV Semester: E-COMMERCE

|                                 |                               |
|---------------------------------|-------------------------------|
| <b>Course Title: E-Commerce</b> | Course Credits: 3 (3L+0T+0P)  |
| <b>Semester: IV</b>             | Duration of SEE: 02 Hours     |
| Total Contact Hours: 42         | SEE: 60 Marks<br>IA: 40 Marks |

### Course Outcomes (COs):

- Compare how internet and other information technologies support business processes.
- Demonstrate an overall perspective of the importance of application of internet technologies in business administration
- Explain the basic business management concepts.
- Demonstrate the basic technical concepts relating to E-Commerce.
- Identify the security issues, threats and challenges of E-Commerce.

### Course Contents:

| Contents                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 | Hours     |
|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------|
| <b>Unit-1</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |           |
| <b>Introduction to E-Commerce and Technology Infrastructure</b><br>Working of Web - HTML Markup for Structure - Creating simple page - Marking up text - Adding Links - Adding Images - Table Markup - Forms - HTML5, Building an E-Commerce Website, Mobile Site and Apps<br><b>Systematic approach to build an E-Commerce:</b> Planning, System Analysis, System Design, Building the system, Testing the system, Implementation and Maintenance, Optimize Web Performance – Choosing hardware and software – Other E-Commerce Site tools – Developing a Mobile Website and Mobile App | <b>11</b> |
| <b>Unit-2</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |           |
| <b>E-Commerce Security and Payment Systems</b><br>E-Commerce Security Environment – Security threats in E-Commerce – Technology Solutions: Encryption, Securing Channels of Communication, Protecting Networks, Protecting Servers and Clients – Management Policies, Business Procedure and Public Laws - Payment Systems                                                                                                                                                                                                                                                               | <b>11</b> |
| <b>Unit-3</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |           |
| <b>Business Concepts in E-Commerce</b><br>Digital Commerce Marketing and Advertising strategies and tools – Internet Marketing Technologies – Social Marketing – Mobile Marketing – Location based Marketing – Ethical, Social, Political Issues in E-Commerce                                                                                                                                                                                                                                                                                                                           | <b>10</b> |
| <b>Unit-4</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |           |
| <b>Project Case Study</b><br>Case Study: Identify Key components, strategy, B2B, B2C Models of E-commerce Business model of any e-commerce website - Mini Project : Develop E-Commerce project in any one of Platforms like Woo-Commerce, Magento or Opencart                                                                                                                                                                                                                                                                                                                            | <b>10</b> |

### Text Book:

1. Kenneth C. Laudon, Carol Guercio Traver - E-Commerce, Pearson, 10th Edition, 2016

### Reference Books:

1. <http://docs.opencart.com/>
2. <http://devdocs.magento.com/>
3. <http://doc.prestashop.com/display/PS15/Developer+tutorials>
4. RobbertRavensbergen, —Building E-Commerce Solutions with Woo Commercell, PACKT, 2nd Edition.