

Name of the Programme: B.Z.C(Botany)

Course s offered	Subjects	Type of course	Programm e name	Programm e outcome	Programm e specific outcome	Course outcome
B.Z.C	Botany Zoology Chemistry	Regular	Botany	Prepare students for prominent career in industry, civil exams, group exams and for further academic study.	Create, select, and apply appropriate techniques, resources and modern technology in multidisciplinary environment.	Usage of subject and practical knowledge to design experiments, amylase and interpret data so as to reach to valid conclusions.

Details of Courses (Botany)

Discipline Specific course, semester-I (from 2019-20)

1. Microbial Diversity and Lower plants(Algae Fungi Bryophyte, Pteridophyta)

Discipline Specific course, semester-II(from 2019-20)

2. Gymnosperms. Taxonomy OF Angiosperms

Discipline Specific course, semester-III

3. Taxonomy of Angiosperms & Medicinal Botany

Discipline Specific course, semester-IV

- 4 Plant Anatomy, Embryology and Palynology

Discipline Specific course(1, E), semester-V

5. Cell Biology and Genetics (DSE)
6. Ecology & Biodiversity (DSE Elective)

Discipline specific Course(1, E), semester-VI

7. Plant Physiology and Metabolism (DSE)
8. Seed Technology (DSE Elective)

B.Sc., BOTANY

First Year, I –Semester Paper-I Microbial Diversity and Lower Plants

DSC - 1A(4hrs./week)

Credits- 4

Theory Syllabus

(60 hours)

UNIT-I

(15 hours)

- 1) **Bacteria:** Structure, nutrition, reproduction and economic importance. Brief account of Archaeobacteria, Actinomycetes and Mycoplasma with reference to little leaf of Brinjal and Papaya leafcurl
- 2) **Viruses:** Structure, replication and transmission; plant diseases caused by viruses and their control with reference to Tobacco Mosaic and Rice Tungro.
- 3) An outline of plant diseases of important crop plants caused by bacteria and their control with reference to Angular leaf spot of cotton and Bacterial blight of Rice.

UNIT-II

(15 hours)

- 1) General characters, structure, reproduction and classification of algae (Fritsch)
- 2) **Cyanobacteria:** General characters, cell structure their significance as biofertilizers with special reference to Oscillatoria, Nostoc and Anabaena.
- 3) Structure and reproduction of the following:
Chlorophyceae- Volvox, Oedogonium and Chara.
Phaeophyceae- Ectocarpus
Rhodophyceae- Polysiphonia.

UNIT-III

(15 hours)

- 1) General characters and classification of fungi (Ainsworth).
- 2) Structure and reproduction of the following:
 - (a) Mastigomycotina- Albugo
 - (b) Zygomycotina- Mucor
 - (c) Ascomycotina- Saccharomyces and Penicillium.
 - (d) Basidiomycotina- Puccinia
 - (e) Deuteromycotina- Cercospora.
- 3) Economic importance of lichens

UNIT-IV

(15 hours)

- 1) **Bryophytes:** Structure, reproduction, life cycle and systematic position of Marchantia, Anthoceros and Polytrichum, Evolution of Sporophyte in Bryophytes.
- 2) **Pteridophytes:** Structure, reproduction, life cycle and systematic position of Rhynia, Lycopodium, Equisetum and Marsilea.

- 3) Stellar evolution, heterospory and seed habit in Pteridophytes.

Course Description: Microbial diversity (Viruses, Bacteria, Algae and Fungi)

This course explores fundamental procedures of Microbial diversity and its economic importance

Executive Summary of Course: students can understand origin and evolution of life with reference to microbes. Students will be expected to read structural features of Virus, Bacteria, Algae and Fungi. The main emphasis of the course is to understand the structures of the microbes and their economic importance for day to day life.

Expected Student Outcome: Students can explain the importance of microbial diversity, Describe the distribution and occurrence of microbes, Discuss about the classification of microbes, Analyze the differences between various microbes, Know the economic importance of the microbes in day to day life.

B.Sc., BOTANY

First Year, II -Semester, Paper-II

Gymnosperms, Taxonomy of Angiosperms and Ecology

DSC-1B

Credits-4

Theory Syllabus

(60 hours)

UNIT-I

(15 hours)

- 1) Gymnosperms: General characters, structure, reproduction and classification (Sporne's). Distribution and economic importance of Gymnosperms.
- 2) Morphology of vegetative and reproductive parts, systematic position and life cycle of Pinus and Gnetum,
- 3) Geological time scale Introduction to Palaeobotany, Types of fossils and fossilization, Importance of fossils.

UNIT-II

(15 hours)

- 1) Introduction: Principles of plant systematics, Types of classification: Artificial, Natural and Phylogenetic; Systems of classification: Salient features and comparative account of Bentham & Hooker and Engler & Prantl classification systems. An introduction to Angiosperm Phylogeny Group (APG).
- 2) Current concepts in Angiosperm Taxonomy: Embryology in relation to taxonomy Cytotaxonomy, Chemotaxonomy and Numerical Taxonomy.
- 3) Nomenclature and Taxonomic resources: An introduction to ICN, Shenzhen code – a brief account. Herbarium: Concept, techniques and applications.

UNIT-III

(15 hours)

- 1) Systematic study and economic importance of plants belonging to the following families: Polypetalae Annonaceae, Capparidaceae, Rutaceae, Fabaceae (Faboideae/Papilionoideae, Caesalpinioideae, Mimosoideae), Cucurbitaceae

- 2) Gamopetalae: Apiaceae, Asteraceae, Asclepiadaceae, Lamiaceae, Monochalmydeae: Amaranthaceae, Euphorbiaceae
- 3) Monocotyledons: Orchidaceae, Poaceae and Zingiberaceae.

UNIT-IV

(15 hours)

1. Component of eco system, energy flow, food chain and foodwebs.
2. Plants and environment, ecological adaptations of plants, Hydrophytes, Xerophytes and Mesophytes
3. Plant Succession serial stages, modification of environment, climax formation with reference to Hydrosere and Xerosere.

This course explores fundamental procedures of Plant diversity and its economic importance

Executive Summary of Course: this course contains general characters and classification of Bryophytes, Pteridophytes, Gymnosperms and Angiosperms. It also describes structural features of some important lower and higher plants. The main emphasis is also given on Angiosperm taxonomy, plant nomenclature and plant classifications. The last unit also covers the various web resources related to plant taxonomy.

Expected Student Outcome: Students can explain the importance of plant diversity, Describe the distribution and occurrence of Bryophytes, Pteridophytes, Gymnosperms and Angiosperms. Know the economic importance of the Gymnosperms and Angiosperms. Students will understand the various types of classifications and plant nomenclature. They will have knowledge on various web resources related to plant nomenclature. Students can learn scientific names of some important plants.

**B.Sc (CBCS) BOTANY- II
YEAR
Semester-III - Paper-III
Taxonomy of Angiosperms and Medicinal Botany**

DSC-1C (4hrs./week)

Theory syllabus

**Credits-4
(60 hours)**

UNIT - I

1. Introduction: Principles of plant systematics, Types of classification: Artificial, Natural and Phylogenetic; Systems of classification: Salient features and comparative account of Bentham & Hooker and Engler & Prantle. An introduction to Angiosperm Phylogeny Group (APG). (7h)
- 2.. Current concepts in Angiosperm Taxonomy: Embryology in relation to taxonomy, Cytotaxonomy, Chemotaxonomy and Numerical Taxonomy. (4 h)
- 3.. Nomenclature and Taxonomic resources: An introduction to ICBN, Vienna code – abrief account. Herbarium: Concept, techniques and applications. (4 h)

UNIT-II

- 4.. Systematic study and economic importance of plants belonging to the following families:
Polypetalae : Annonaceae, Capparidaceae, Rutaceae, Fabaceae (Faboideae/papilionoideae, Caesalpinioideae, Mimosoideae), Cucurbitaceae
5. Gamopetalae: Apiaceae, Asteraceae, Asclepiadaceae, Lamiaceae
6. Monochalmydeae: Amaranthaceae, Euphorbiaceae, Monocotyledons: Orchidaceae and Poaceae. (15h)

UNIT - III

- 7..Ethnomedicine: Scope, interdisciplinary nature, distinction of Ethnomedicine from Folkloremedicine. (3h)
8. Outlines of Ayurveda, Sidda, Unani and Homeopathic systems of traditional medicine. Role of AYUSH, NMPB, CIMAPand CDRI. (5 h)
- 9.. Plants in primary health care: Common medicinal plants – Tippiateega(*Tinospora cordifolia*), tulasi (*Ocimum sanctum*), pippallu (*Piper longum*), Karakaya (*Terminalia chebula*), Kalabanda (*Aloe vera*), Turmeric (*Curcuma longa*). Evaluation of crude drugs. (7h)

UNIT-IV

10. Traditional medicine vs Modern medicine: Study of selected plant examples used in traditional medicine as resource (active principles, structure, usage and pharmacological action of modern medicine: Aswagandha (*Withaniasomnifera*), Sarpagandha (*Rauwolfiaserpentina*), Nelausiri(*Phyllanthusamarus*), Amla (*Phyllanthusemblica*) and Brahmi (*Bacopamonnier*). (8h)
11. Pharmacognosy: Introduction and scope. Adulteration of plant crude drugs and methods of identification - some examples.IndianPharmacopoeia. (4h)
12. Plant crude drugs: Types, methods of collection, processing and storage practices. (3h)

This course explores fundamental procedures of Plant anatomy, embryology and phytochemistry. **Executive Summary of Course:** first unit of this course contains basics on Plant anatomy and Embryology. Second unit includes the pollination biology aspects, fertilization, seed dispersal mechanism and apomyxis etc. Third unit covers the Biodiversity aspects like loss, threat and conservation of biodiversity. fourth unit covers the pharmacognosy and phytochemistry aspects viz., scope and importance of phytochemistry and some important medicinal plants used for treatment of various ailments.

Expected Student Outcome: students can explain the importance of Plant Anatomy, Describe the distribution and occurrence of Biodiversity, Discuss about the value addition of Biodiversity, Know about conservation of biodiversity, List out and describe the various pollinators useful for pollination, List out the endangered plant species and their importance, Describe medicinal importance of various drugs used as medicine.

YEAR
Semester-IV Paper IV
Plant Anatomy, Embryology and Palynology

DSC-1D (4hrs./week) Theory syllabus

Credits-4 (60h)

UNIT-I

1. Meristems: Types, histological organization of shoot and root apices and theories. (3h)
2. Tissues and Tissue Systems: Simple, complex and special tissues. (6h)
3. Leaf: Ontogeny, diversity of internal structure; stomata and epidermal outgrowths. (6h)

UNIT-II

1. Stem and root anatomy: Vascular cambium – Formation and function. (3h)
2. Anomalous secondary growth of Stem - *Achyranthes*, *Boerhaavia*, *Bignonia*, *Dracaena*;
Root – *Betavulgaris* (5h)
3. Wood structure: General account. Study of local timbers – Teak (*Tectona grandis*),
Rosewood, (*Dalbergia latifolia*), Red sanders, (*Pterocarpus santalinus*) Nallamaddi
(*Terminalia tomentosa*) and Neem (*Azadirachta indica*). (7h)

UNIT - III

4. Introduction: History and importance of Embryology. (2h)
5. Anther structure, Microsporogenesis and development of male gametophyte. (6h)
6. Ovule structure and types; Megasporogenesis; types and development of female gametophyte. (7h)

UNIT-IV

7. Pollination - Types; Pollen - pistil interaction. Fertilization. (4h)
8. Endosperm - Development and types. Embryo - development and types; Polyembryony
And Apomixis - an outline. (5h)
- 12.. Palynology- Pollen morphology, NPC system and application of Palynology. (6h)

Course description: Plant Anatomy, Embryology, Biodiversity, Pharmacognosy and phytochemistry

This course explores fundamental procedures of Plant anatomy, embryology and phytochemistry.

Executive Summary of Course: first unit of this course contains basics on Plant anatomy and Embryology. Second unit includes the pollination biology aspects, fertilization, seed dispersal mechanism and apomyxis etc. Third unit covers the Biodiversity aspects like loss, threat and conservation of biodiversity. fourth unit covers the pharmacognosy and phytochemistry aspects viz., scope and importance of phytochemistry and some important medicinal plants used for treatment of various ailments.

Expected Student Outcome: students can explain the importance of Plant Anatomy, Describe the distribution and occurrence of Biodiversity, Discuss about the value addition of Biodiversity, Know about conservation of biodiversity, List out and describe the various pollinators useful for pollination, List out the endangered plant species and their importance, Describe medicinal importance of various drugs used as medicine.

B.Sc. Botany- III Year

Semester-V : Paper-V Cell Biology and Genetics

Credits-3

DSC-1E (3hrs/week)Core

45 hours

Theory Syllabus

Unit - I:

- | | | |
|----|---|-------------------|
| 1. | Principles of Microscopy: Light Microscope and Electron Microscope. | Principles (2h) |
| 2. | cell envelopes: Ultra structure of cell wall, molecular organization of cell membranes. | Plant (3h) |
| 3. | : Ultra structure, Nucleic acids - Structure of DNA, types and functions of RNA. | Nucleus (4h) |
| 4. | chromosomes: Morphology, organization of DNA in a chromosome, Euchromatin and | Chromosomes (3 h) |
| 5. | | Heterochromatin |

erchromatin, Karyotype. Special types of chromosomes: Lampbrush and Polytene chromosomes.

6. nuclear genome: Mitochondrial DNA and Plastid DNA, Plasmids. Extra (3h)

Unit - II:

7. division: Cell and its regulation; mitosis, meiosis and their significance Cell (3h)

8. Mendelism: Laws of inheritance. Genetic interactions - Epistasis, Complementary, Supplementary and inhibitory genes. Me (5h)

9. Linkage: A brief account and theories of Linkage. Crossing over: Mechanism and theories of crossing over. (4 h)

10. maps: Construction of genetic maps with Two point and Three point test cross data. Genetic (3h)

Unit - III:

11. Mutations: Chromosomal aberrations - structural and numerical changes; Gene mutations, Transposable elements. (4h)

12. Gene Organization - Structure of gene, Genetic code, Process of DNA Replication Polymerase enzyme. (5h)

13. Mechanism of transcription in Prokaryotes and Eukaryotes. (4h)

14. Regulation of gene expression in prokaryotes (Lac and Trp Operons). (2h)

Course description: Cell and Molecular Biology

This course explores fundamental procedures of Cell and Molecular Biology.

Executive Summary of Course: this course is divided into three units. First unit of this course contains techniques in biology viz. x-ray diffractions, light microscopy, phase contrast, fluorescent and electron microscopy. Unit two deals about the cell organelles, their functions and molecular structure of DNA etc. third unit consists of cell membrane and genetic material. It also explains the importance of Meiosis and Mitosis.

Expected Student Outcome: students can learn different techniques and they are able to use the various microscope techniques for their research analysis. Students will understand the cell organelles and their functions, Discuss about the important structural features, they also will understand the mitosis and meiosis and its importance

B.Sc (CBCS) Botany-III Year

Semester-V: Elective-I

Ecology & Biodiversity

DSE-1E(3hrs./week)

**Credits-3
(45hours)**

Theory Syllabus

UNIT - I

1. Concept and components of Ecosystem. Energy flow, food chains, food webs, ecological pyramids, Biogeochemical cycles –Carbon Cycle (4h)
2. Definition of Environment: Atmosphere (Troposphere, Stratosphere, Mesosphere, Ionosphere), Hydrosphere, Lithosphere & Biosphere. (3h)
3. Plants and environment: Ecological factors - Climatic (Light and Temperature) and biotic. Ecological adaptations of plants. (5h)
4. Edaphic Factors: Soil- Formation- Weathering, mode of formation-residual; Transported: Colluvial, Alluvial, Glacial & Eolian. Soil erosion & Conservation. (4h)

UNIT - II

5. Population ecology: Natality, Mortality, Growth curves, Ecotypes & Ecads. (4h)
6. Community ecology: Frequency, density cover, Life forms & Biological spectrum. (4h)
7. Community Dynamics: Succession - Serial stages, Modification of physical environment, Climax formation with reference to Hydrosphere and Xerosere. (4h)
8. Production ecology: Concepts of productivity - Primary and Secondary Productivity. (4h)

UNIT- III

9. Biodiversity: Concepts, Convention of Biodiversity - Earth Summit (Copenhagen). (4h)
10. Biodiversity- Levels, threats and value (3h)
11. Hot spots of India - North Eastern Himalayas, Western Ghats; Endemism. (3h)
IUCN categories, RED data book
12. Principles of conservation – *In situ* and *Ex situ*. Role of organizations in the conservation of Biodiversity – WWF and NBPGR. (3h)

Course description: ecology & Biodiversity

This course explores fundamental Functions of ecology and importance of biodiversity And conservation Biology,

Executive Summary of Course: first unit of this course contains basics ecology and ecosystem ,ecological pyramids, food chain and food web includes atmosphere biotic and abiotic factors etc. Second unit contains population ecology, community ecology, community dynamica and production ecology etc. Third unit covers \the Biodiversity aspects like loss, threat and conservation of biodiversity.

Expected Student Outcome: students can explain the importance of Plant Ecology, Describe the distribution and occurrence of Biodiversity, Discuss about the value addition of Biodiversity, Know about conservation of biodiversity.

B.Sc (CBCS) Botany-III Year

Semester-VI: Paper- VII

Plant Physiology

DSC-1F(3hrs./week)

(45hours)

Unit-I

1. Plant-Water Relations: Importance of water to plant life, physical properties of water, diffusion, imbibition, osmosis; water, osmotic and pressure potentials; absorption, transport of water, Ascent of sap; Transpiration; Stomatal structure and movements. (7h)
2. Mineral Nutrition: Essential macro and micro mineral nutrients and their role; symptoms of Mineral deficiency. (3h)
3. Translocation of organic substances: Mechanism of phloem transport. (2h)
4. Enzymes: Nomenclature, Characteristics, Classification, Mechanism and regulation of enzyme action, factors regulating enzyme activity. (3h)

UNIT- II

5. Photosynthetic pigments, absorption and action spectra; Red drop and Emerson enhancement effect; concept of two photosystems; mechanism of photosynthetic electron transport and evolution of oxygen; Factors effecting Photosynthesis, Photophosphorylation. (6h)
6. Carbon assimilation pathways: C₃, C₄ and CAM. (4h)
7. Nitrogen Metabolism: Biological nitrogen fixation, nitrate reduction, ammonia assimilation, (GS-GOGAT, transamination) (4h)

UNIT - III

8. Respiration: Aerobic and Anaerobic; Glycolysis, Krebs cycle; electron transport system,

- mechanism of oxidative phosphorylation, pentosephosphate pathway. (5h)
9. Growth and Development: Physiological effects of phytohormones–Auxins, gibberellins, cytokinins, ABA, ethylene and Brassinosteroids (5h)
10. Physiology of flowering and photoperiodism. Role of Phytochrome in flowering. (3h)
Stress physiology: Concept of water, salt and temperature stresses and plant responses

.Discription of the course: Plant Physiology and Metabolism

This course explores fundamental procedures of Plant physiology and metabolism.

Executive Summary of Course: first unit of this course contains plant and water relationships. Also covers the various types of essential elements useful for plant growth and active and passive transport of ions, second unit covers the composition of phloem, photosynthesis, electron transport system, C3 and C4 cycles etc. third unit covers the respiration and glycolysis. It also includes enzymes, their structure and functions. Fourth unit includes nitrogen metabolism and growth regulators.

Expected Students' Outcome: Students can explain the importance of Plant, physiology, Describe the plant and water relationship, Discuss about the importance of micro and macro elements, Know about phloem and their contents, students will understand the effect of growth regulators and nitrogen metabolism in plants.

B.Sc (CBCS) BOTANY: III YEAR

Semester-VI : Elective IV Seed Technology

DSE- 1F(3hrs./week)

Credits-3

Theory Syllabus

(45hours)

UNIT- I

1. Seed development in cultivated plants, seed quality concept, importance of genetic purity of seed. Hybrid seed production and Heterosis. (4h)
2. Principles of hybrid seed production-Cross pollination, Emasculation, role of pollinators and their management. (5h)
3. Collection and storage of pollen for artificial pollination. (3h)
4. Seed: Structure and types. Seed dormancy: causes and methods of breaking dormancy. (4h)

UNIT-II

5. Cultural practices and harvesting of Seed: Isolation, Sowing, Cultural practices,

- harvesting and threshing of the following crops: a) Rice b) Cotton)Sunflower (4h)
- 6. Physio and Bio-chemical changes duringseedstorage. (3h)
- 7. Seed Treatment to control seed borne disease–Generalaccount (3h)
- 8. Seed production technology; seed testing- Procedures of seed testing, seed testing laboratories and importance ofseedtesting. (4h)

UNIT-III

- 9. Seed viability, factors affecting seed viability andgeneticerosion. (4h)
- 10. Seed storage: Long term and short term storage. Orthodox and recalcitrantseeds. Packing of seeds – Principles, practices, baggingandlabelling. (4h)
- 12. Seed banks- National, International and Millenniumseedbanks. (3h)
- 11. Seed certification- History, Seed certification agency, Indian minimum, general and specific seedcertificationstandard. (4h)

Description of the course: Seed technology

This course explores fundamental procedures Seed production and storage

Executive Summary of Course: first unit contains seed development in plants and hybridization, pollination techniques etc. second unit covers seed culture, seed production technology processes revels. Third inits covers seed viability, seed storage and importance, seed banks etc.

Expected Student Outcome: students can explain the importance of seed technology, hybridgation and seed banks.

Department of chemistry

Program Outcome: The Chemistry program is the most important course for life science students and physical science students as it has multi-disciplinary impact. The program imparts knowledge about basic chemical concepts, analytical techniques, physical chemistry. Students understand the concepts of organic chemistry and drug synthesis. The course also covers emerging trends, environmental issues, medicinal chemistry and instrumental methods of analysis.

Program Specific outcomes: BSc Chemistry(1st, 2nd, 3rd years)

PSO1: To learn basic concepts of Chemistry with special emphasis on chemical properties, reaction mechanisms structural theory in organic chemistry, theory of quantitative analysis and material science.

PSO2: Program imparts knowledge of chemistry of block elements, symmetry of molecules, phase rule, colloids and surface chemistry, stereochemistry of carbon compounds, coordination compounds, nitrohydrocarbons and asymmetric synthesis.

PSO3: Students learn about Coordination Compounds, amines & heterocyclic compounds, molecular spectroscopy, photochemistry, instrumental methods of analysis, inorganic reaction mechanisms, carbohydrates, proton magnetic resonance spectroscopy and medicinal chemistry.

Course outcomes:

BSc Chemistry (1st year)

CO1: To learn basic concepts of Chemistry with s, p block elements, structural theory in organic chemistry, acyclic, alicyclic hydrocarbons, gases and liquid state, reaction mechanisms and evaluation of analytical data.

CO2: Program imparts knowledge of Zero group and D block elements, aromatic hydrocarbons, dilute solutions and colligative properties, solid state chemistry. Student will learn volumetric analysis, theories of bonding in metals and material science.

BSc Chemistry(2nd year)

CO3: Concepts of f-block elements symmetry of molecules, non-aqueous solvents, alcohols, phenols, carbonyl compounds, phase rule colloids & surface chemistry, nanomaterials, stereochemistry of carbon compounds and conformational analysis.

CO4 : Student learns about Coordination compounds, organo metallic chemistry, metal carbonyls and related compounds, carboxylic acids & derivatives, synthesis based on carbanions, nitro hydrocarbons, electro chemistry & EMF, pericyclic reactions and asymmetric synthesis.

BSC Chemistry(3rd year)

CO5: Concepts of Coordination compounds, boranes and carboranes, details about amines, cyanides & isocyanides, heterocyclic compounds, basic concepts of chemical kinetics, molecular spectroscopy, rotational, IR, Electronic spectroscopy and photochemistry.

CO6: (E) Solvent extraction, thin layer & paper chromatography, column, ion exchange gas, high performance liquid chromatography, calorimetry & spectrophotometry, and electroanalytical methods(Interfacial methods and bulk methods)

CO7: Concepts of inorganic reaction mechanism, bio in organic chemistry, hard and soft acids bases, carbohydrates, amino acids & proteins, thermodynamics, proton magnetic resonance spectroscopy and mass spectroscopy

CO8: (E) Introduction & terminology of diseases, terminology in medicinal chemistry, drugs and ADME, enzymes & receptors, synthesis & therapeutic activity of drugs (Chemotherapeutics, drugs to treat metabolic disorders and drugs acting on nervous system), molecular messengers & health promoting drugs.

Government Degree College – Godavarikhani			
Department of Computers			
			B.COM
			COURSE OUTCOMES
S.No	No. of the Outcome	Course	Course Outcomes
1	Semester 1	Fundamental of Information Technology	1.Ability to learn DOSCommands 2. Ability to learn Ms-Word and familiarize with mail-merge concepts, print settings anddocumentation. 3. An ability to identify, formulates, and solves hardware and software computing problems, accounting for the interaction between hardware andsoftware. 4. Ability to learn and prepare power point presentation by creatingslides.
2	Semester 2	Programming with C	1.Able to write and execute C programs using decision making statements and loops 2.Able to write modular C programs using functions and recursion 3.Able to use array variables, pointers and strings in C programs based on need Able to create and work with user-defined data types using structures, unions, and enums.
3	Semester3	Web Programming	1.Able to create web pages using basic HTML tags 2.Able to beautify the web pages using kinds of cascading style sheets 3.Able to implement both client and server-side validation using JavaScript 4.Able to understand and work with DOM model of JavaScript Able to create and implement the web pages that are responsive using Java Script and DHTML
4	Semester4	RDBMS	1.Understand the terminology , architecture of DBMS 2.to understand the difference between file system and DBMS, DBMS vendors, and data models

			<p>3. Able to understand the purpose of ER Models and can draw ER-diagrams for the given data.</p> <p>4. Able to work with SQL using DDL, DML, DCL commands</p> <p>5. Able to create and implement PL/SQL blocks using stored procedures, cursors and triggers.</p>
5	Semester5	Objective Oriented Programming with C++	<p>Students will able</p> <p>1.To appropriate data structure as applied to specified problem definition.</p> <p>2.To handle operation like searching, insertion, deletion, traversing mechanism.</p> <p>3.To apply concepts learned in various domains like DBMS, compiler construction</p>
6	Semester6	E- Commerce	<p>Students able to</p> <p>1. To understand the scope, trade cycle, and competitive advantage of e-commerce business strategy.</p> <p>2. To understand the business-to-business e-Commerce, EDI.</p> <p>3. To understand the role of internet and extranet in the e-Commerce business strategy business strategy.</p> <p>4. To understand the public policy used for consumer and seller protection.</p> <p>4 Understand the public policy used for consumer and seller protection.</p>
7	Semester6	Management Information System	<p>Students able to</p> <p>1.Decision making and information system</p> <p>2. Understand strategic planning of information system.</p> <p>3.Learn different types of system SDLC</p> <p>4. Learn about centralized and decentralized and distributed processing system.</p>

Department of Computers

B.Sc COURSE OUTCOMES

S.No	No. of the Outcome	Course	Course Outcomes
1	Semester 1	Programming in C	<p>1.Able to write and execute C programs using decision making statements and loops</p> <p>2.Able to write modular C programs using functions and recursion</p> <p>3.Able to use array variables, pointers and strings in C programs based on need</p> <p>Able to create and work with user-defined data types using structures, unions, and enums.</p>
2	Semester 2	Objective Oriented Programming with C++	<p>Students will able</p> <p>1.To appropriate data structure as applied to specified problem definition.</p> <p>2.To handle operation like searching, insertion, deletion, traversing mechanism.</p> <p>3.To apply concepts learned in various domains like DBMS, compiler construction</p>
3	Semester3	Data Structures using JAVA	<p>1.Gain knowledge about basic Java language syntax and semantics to write Java programs and use concepts such as variables, conditional and iterative execution methods etc.,</p> <p>2. Understand the fundamentals of object-oriented programming in Java, including defining classes, objects, invoking methods etc., and exception handling mechanisms</p> <p>3. Understand the principles of inheritance, packages and interfaces.</p>
4	Semester4	DBMS	<p>1.Understand the terminology , architecture of DBMS</p> <p>2.to understand the difference between file system and DBMS, DBMS vendors, and data models</p> <p>3. Able to understand the purpose of ER Models and can draw ER-diagrams for the given data.</p> <p>4. Able to work with SQL using DDL, DML, DCL commands</p> <p>5. Able to create and implement PL/SQL blocks using stored procedures, cursors and triggers.</p>

5	Semester5	Operating System	<ol style="list-style-type: none"> 1. To understand the services provided by and the design of an operating system. 2. To understand the structure and organization of the file system. 3. To understand what a process is and how processes are synchronized and scheduled. 4. To understand different approaches to memory management. 5. Students should be able to use system calls for managing processes, memory and the file system. 6. Students should understand the data structures and algorithms used to implement an OS
6	Semester5	Programming with Python	<ol style="list-style-type: none"> 1.able to know how to use the free-source python to write basic programs and high level applications using concepts such as class ,BIF of python 2.To handle operation like searching, insertion, deletion, traversing mechanism 3.Able to write modular Python programs using functions and recursion 4.Able to write I/O and Error Handling in Python
7	Semester6	Web Programming	<ol style="list-style-type: none"> 1.Able to create web pages using basic HTML tags 2.Able to beautify the web pages using kinds of cascading style sheets 3.Able to implement both client and server-side validation using JavaScript 4.Able to understand and work with DOM model of JavaScript <p style="text-align: center;">Able to create and implement the web pages that are responsive using Java Script and DHTML</p>
8	Semester6	Software Engineering	<ol style="list-style-type: none"> 1.Students will learn about nature and scope of software 2.Learn about software process models 3.learn about core principles,communicationprinciples,modeling principles 4.Students gain knowledge in design concepts,architecturaldesign,component design also learn about UML

Go

Programs and Courses Outcomes

Program Outcome

- PO1: Students would gain a thorough grounding in the fundamentals of Accounts, various types of business organizations and their management, and commerce related subjects. Like Economics, Fundamentals of Information technology.
- PO2: Students would gain knowledge of Advance Accounting, Statistics and taxation, entrepreneurship developments and business ethics, foreign trade etc. The students will acquire the knowledge, skill in different areas of communication, decision making, innovations and problem solving in day to day business activities.
- PO3: Students would gain knowledge of different specializations in Accounting, costing, banking and finance with the practical exposure helps the students to stand in organization. Students would gain thorough systematic and subject skills within various disciplines of finance, auditing and taxation, accounting, management, communication, computer. Students can also get the practical skills to work as accountant, audit assistant, tax consultant, and computer operator. As well as other financial supporting services.

Program Specific Outcomes:

- ❖ After completing Bachelor of Commerce (General & Computer Applications), students can get skills regarding various aspects like Marketing Manager, Selling Manager, over all Administration abilities of the Company.
- ❖ By goodness of the preparation they can turn into a Manager, Accountant , Management Accountant, Cost Accountant, Bank Manager, Auditor, Company Secretary, Teacher, Professor, Stock Agents, Government employments and so on.,
- ❖ Students will prove themselves in different professional exams like C.A., C S, CMA, MPSC, UPSC. As well as other coerces.
- ❖ Students will learn relevant Advanced accounting career skills, applying both quantitative and qualitative knowledge to their future careers in business.
- ❖ Students will be able to do their higher education and can make research in the field of finance and commerce.
- ❖ Students can independently start up their own Business.

S.No	No. of the Outcome	Course	Course Outcomes
1	CO1	Financial Accounting-I	<p>Enable students to,</p> <ol style="list-style-type: none"> 1. Learn basic fundamentals of accounting. 2. Prepare various types of books in accounting. 3. learn Importance and how to prepare trial balance , to know various types of errors and its rectification 4. Know Importance of bank reconciliation statement and how to prepare bank reconciliation statement by using the pass book and cashbook. 5. Know the profit or loss of the business and its financial position at the end of the year. 6. Learn about Depreciation, reasons for provide it and types of it.
2	CO2	Business Organization And Management	<p>Students know,</p> <ol style="list-style-type: none"> 1. The various types of business, trade, industry and commerce. 2. The various functions of business and how to enter into the new business. 3. The various types of companies in India. 4. How to establish the companies. 5. How to maintain , prepare planning and decentralization of authority in the Business.
3	CO3	Business Economics	<p>Students learn,</p> <ol style="list-style-type: none"> 1. The various types of costs and revenues in the business. 2. The demand determines in the fixation of the price of a product 3. The market structure, how to determine the types of price of various markets. 4. About the national income and to compute the national income, how many problems are faced in calculation the national income
4	CO4	Fundamental of Information Technology	<p>Students have an ability to learn,</p> <ol style="list-style-type: none"> 1. DOS Commands 2. Ms-Word and familiarize with mail-merge concepts, print settings and documentation. 3. Identify, formulates, and solves hardware and software computing problems, accounting for the interaction between hardware and software. 4. And prepare power point presentation by creating slides.
5	CO5	Financial Accounting-II	<p>Students know,</p> <ol style="list-style-type: none"> 1. The reasons for depreciation on various assets and how to calculate the depreciation. 2. The various types of reserves and provisions and its users. 3. Various types of bills and its uses in the business. 4. The consignment business and its importance. How to calculate profit or loss in

			theconsignmentbusiness. 5. The joint venture business and its uses in the present Marketing system.
6	CO6	Foreign Trade	Students enable to 1. Acquire knowledge about foreign trade procedures and policies 2. Understand balance of trade and balance of payments. 3. Know the various types international financial institutions and their management like IMF,IBRD,WB.ADB,NDB, UNCTAD, WTO etc., 4. Know the Indian and foreign trade policies.
7	CO7	Programming with C	Students able to, 1. Write and execute C programs using decision making statements and loops 2. Write modular C programs using functions and recursion 3. Use array variables, pointers and strings in C programs based on need 4. Create and work with user-defined data types using structures, unions, and enums
8	CO8	Managerial Economics	Enable students to Understand , 1. Relevance of various tradetheories/models 2. The internal and external decisions to be made by managers. 3. Analyze the demand and supply conditions. 4. Optimal business decisions by integrating concepts of economics, mathematics and statistics. 5. To enable students to use economic tools to analyze diversity of issues inthe internationaleconomy.
9	CO9	Advanced Accounting	Students able to, 1. Explain and demonstrate accounting practice for equity investments (including accounting for group structures), measurement and disclosure of information, and financial decisionmaking 2. Identify and explain the conceptual underpinnings for current advanced financial accounting and reportingissues. 3. Identify and explain current issues related to financial accounting and financialreporting. 4. Critically analyze and interpret published financialinformation.
10	CO10	Business Statistics	Enable students, 1. To know the importance of statistics, how to prepare best questionnaire and various methods for collection of data and how to presentation in tabulation & diagrammatic. 1.To know the various types of measures of central tendency and itsimportance. 2. To know the importance of co relation and regression, how to calculate the correlation andregression. 3. To know the importance of index number its importance today's marketconditions. 4. To know what is probability and its usage.

11	CO11	Income Tax	<p>Students able,</p> <ol style="list-style-type: none"> 1. To have knowledge on the basic concepts as per income tax act 1961. 2. To know how to compute the total income from various heads of income and deductions eligible as per section 80 C to 80(U). 3. To know how to compute the tax liability of assesses as per income tax 1961 along with present slab rates. 4. To know the meaning of GST and its importance of calculations. 5. To know the meaning of capital gains, income from other sources, clubbing and aggregation of income.
12	CO12	Entrepreneurial Development and Business Ethics	<p>Enable students to,</p> <ol style="list-style-type: none"> 1. Have the ability to discern distinct entrepreneurial traits 2. Know the parameters to assess opportunities and constraints for new business ideas 3. Understand the systematic process to select and screen a business idea 4. Design strategies for successful implementation of ideas 5. Write a business plan
13	CO13	Corporate Accounting	<p>Enable students to know,</p> <ol style="list-style-type: none"> 1. The various types of shares, its importance and how the shares are issued to the public. 2. The various types of debentures issued by company and how to redemption of debentures. 3. The importance of goodwill and how to compute the goodwill, shares of the company. 4. How to prepare the final accounts as per company's act 2013 as per schedule II & III.
14	CO14	Financial Institutions & Markets	<p>Enable students,</p> <ol style="list-style-type: none"> 1. To understand how to manage services counters and various types of service elements. 2. To have knowledge on strategies for pricing and promotion in marketing. 3. Students understand the uses and importance of distributing services. 4. To understand the various retail financial services. 5. To know the various types of activities of banking and non-banking activities. 6. To enable an idea on the merchant banking services. 7. To have knowledge on the various types of leases in the financial markets. 8. To have awareness on various types of credit rating agencies.

15	CO15	Web Programming	<p>Students,</p> <ol style="list-style-type: none"> 1. Able to create web pages using basic HTML tags 2. web pages using kinds of cascading style sheets 3. both client and server-side validation using JavaScript 4. Able to understand and work with DOM model of JavaScript 5. Able to create and implement the web pages that are responsive using Java Script and DHTML <p style="text-align: right;">Able to beautify the Able to implement</p>
16	CO16	RDBMS	<p>Students Able to,</p> <ol style="list-style-type: none"> 1. Understand the terminology , architecture of DBMS 2. Understand the difference between file system and DBMS, DBMS vendors, and data models 3. Understand the purpose of ER Models and can draw ER-diagrams for the given data. 4. Work with SQL using DDL, DML, DCL commands 5. Create and implement PL/SQL blocks using stored procedures, cursors and triggers.
17	CO17	Banking Theory & Practice	<p>Students able,</p> <ol style="list-style-type: none"> 1. To have knowledge on the various types of banks in India and its functions. 2. To enable the students about RBI, its constitution and governance as per RBI Act. And recent trends in central bank functions. 3. Students know that various types of monetary policy statements of RBI. 4. To know the various development banks in India that is IDBI, NABARD etc., 5. To know about the customer and banks, relationship between banker and customer, KYC Norms. 6. To know the E and M Banking.
18	CO18	Cost Accounting	<p>Enable students,</p> <ol style="list-style-type: none"> 1. To know the various types of costs and how to prepare cost sheet in the production department. 2. To have knowledge on how to control the materials and how to issue the materials from purchasing department to production department. 3. To know the various types payments to the labor and its importance. 4. To have knowledge on the various types of methods of costing.
19	CO19	Business Laws	<p>Enable students,</p>

			<ol style="list-style-type: none"> 1. To know about the contract and various types of contracts as per Indian contract 1872 2. To know the offer and acceptance of a contract and its legal essential elements. 3. To have an idea on who are eligible for contracts. 4. To know the implied conditions and warranties as per sale of goods act 1930.
20	CO20	Banking Theory & Practice	<p>Students get knowledge,</p> <ol style="list-style-type: none"> 1. On the various types of banks in India and its functions. 2. About RBI, its constitution and governance as per RBI Act. And recent trends in central bank functions. 3. About various types of monetary policy statements of RBI. 4. About various development banks in India that is IDBI, NABARD etc. 5. About the customer and banks, relationship between banker and customer, KYC Norms. 6. On E and M Banking.
21	CO21	Computerized Accounting	<p>Students know,</p> <ol style="list-style-type: none"> 1. Processing a variety of accounting transactions; 2. Converting a manual accounting system to a computer based system; 3. Prepare Financial Statements on the completion of the accounting cycle in a timely fashion. 4. Create and customize a statement of cash flows for a specific period. 5. Investigate the detail underlying income statement items.
22	CO22	Financial Management	<p>Enable Students to,</p> <ol style="list-style-type: none"> 1. Understand the techniques of financial management. 2. Analysis and differentiate the concepts of capital budgeting techniques, traditional and modern discounting methods. 3. Understand the tools and techniques of cash cycle and tools and techniques of inventory management. 4. Understanding the types of leverages and different approaches of capital structure.
23	CO23	Principals of Marketing	<p>This helps students to,</p> <ol style="list-style-type: none"> 1. Understand various concepts of marketing and marketing environment. 2. Know the students on consumer how determine buying decision process and its stage 3. Know the product life cycle and how to develop new product in the market. 4. Know the students on various factors influencing price determination and its strategies
24	CO24	Objective Oriented Programming with C++	<p>Students able,</p> <ol style="list-style-type: none"> 1. To appropriate data structure as applied to specified problem definition. 2. To handle operation like searching, insertion, deletion, traversing mechanism. 3. To apply concepts learned in various domains like DBMS, compiler construction

25	CO25	Managerial Accounting	<p>Enable students,</p> <ol style="list-style-type: none"> 1. To understand the students on scope and advantages of Managerial accounting. 2. To understand the students on objectives and various methods of financial statement analysis 3. To have knowledge on the importance BEP And CVP 4. To enable the students about budget, its types, preparation various budgets. 5. To enable the students to estimates working capital requirements.
26	CO26	Company Law	<p>Students know,</p> <ol style="list-style-type: none"> 1. The relevant statutory materials, case law and regulatory practice relating to the major topics in Company Law 2. The economic function of the company as a legal structure for business, the legal nature and significance of the limited liability of a company, the price paid for limited liability, the legal nature of the role of the board of directors of a company and of the legal relationships between a company's management and its various stakeholders. 3. The current policy trends and developments in Company Law and of the likely impact of these trends and developments on the major topics in Company Law.
27	CO27	Auditing	<p>Enable students to,</p> <ol style="list-style-type: none"> 1. Understand the objectives and importance of auditing. 2. Know the how many steps to be taken at the commencement of a new audit and audit program. 3. Have an idea on auditing VS investigation. 4. Understand the students on how verification and valuation of various types of assets and liabilities. 5. Understand the student on auditors qualifications, rights, duties, as per companies Act 2013.
28	CO28	Commerce Lab	<p>Students know,</p> <ol style="list-style-type: none"> 1. All kinds of forms used in banks, finance corporations, insurance and tax departments etc. 2. Prospectus, Share certificates, MoA, AoA and Annual Reports of various companies. 3. Financial bills like, Bills of exchange, Promissory notes, D.Ds, Cheques etc. 4. To fill up the income tax, sales tax, municipal tax returns etc.
29	CO29	Human resource Management	<p>Enable Students to,</p> <ol style="list-style-type: none"> 1. Understand the concepts of HRM and its relevance in organizations. 2. Develop necessary skill set for application of various HR issues. 3. Analyze the strategic issues and strategies required selecting and developing man power resources. 4. Integrate the knowledge of HR concepts to take correct business decisions.
30	CO30	Tax Planning and Management	<p>Students learn,</p> <ol style="list-style-type: none"> 1. Corporate tax laws and uses it for tax planning. 2. Differences between tax evasion and tax planning. 3. Different types of incomes and their tax ability and expenses and their deductibility.

			4. What is business income and when it gets taxed.
31	CO31	E-Commerce	<p>Enable students to understand,</p> <ol style="list-style-type: none"> 1. The scope, trade cycle, and competitive advantage of e-commerce business strategy. 2. The business-to-business e-Commerce, EDI. 3. The role of internet and extranet in the e-Commerce business strategy business strategy. 4. The public policy used for consumer and seller protection. <p>4 Understand the public policy used for consumer and seller protection.</p>
32	CO32	Management Information System	<p>Students will able to Understand,</p> <ol style="list-style-type: none"> 1. Decision making and information system 2. Strategic planning of information system. 3. Different types of system SDLC 4. Centralized and decentralized and distributed processing system.

PO1. UG (BA/BSc/BCom/) Language

- On successful completion of the programme, the students will be able to communicate effectively in the second language i.e.English.
- It will improve their LSRW skills.
- Their intellectual, personal and professional abilities will be developed through effective communicative skills; ensuring high standard of behavioural attitude through literary subjects and shaping the students as socially responsiblecitizens.
- On successful completion ofthe programme, the students will be familiar with different genres of literature including Poetry, Fiction, Prose, Drama, Autobiographyetc.
- It will help students build their analytical skills and interpretive argument andbecome creative and decisivewriters.
- The study of this programme instigates the imagination, cultivates a capacity for understanding ambiguity and complexity, and instills sensitivity to the diversitiesof humanexistence.
- Students will have knowledge of literature in English language and literarytheories.
- They will have a thorough working knowledge of current literary criticalapproaches, theories and methodologies in the field of literary studies inEnglish.
- They will be able to analyze literary texts in light of their historical and intellectual background.
- They will be able to analyze literary problems in a way that reflects insight into the distinctive historical, traditional and social situations of English literature as an academic discipline.

Program Specific Outcomes

- Students will be able to communicate clearly, effectively and handle their day to day affairs well with their knowledge of language skills.
- Practice the skill of writing in English and that of public speaking.
- Graduates of English literature program have skills that are highly valued by many types of employers, including critical thinking skills and strong writing skills which make them employable in a wide range of professions.
- The programme develops competence and communication skill in the language so that they might participate in all India as well as state services and other competitive examinations.
- They will be familiar with the conventions of diverse textual genres including fiction, non-fiction, poetry, autobiography, biography, Journal, film, plays, editorials etc. They can apply critical frameworks to analyze the linguistic, cultural and historical background of texts written in English.

Course Outcome

CO1:

- The students will get familiar with the main events, conflicts, inventions and rich history of Ancient India.
- On successful completion of the Programme, the students will be able to gain knowledge on fundamental principles of English grammar including parts of speech, sentence types, sentence analysis, simple /compound/complex sentences, subject-verb agreement, pronoun usage, punctuation, capitalization etc.
- The programme develops competence and communication skill in the language so that they might participate in all India as well as state services and other competitive examinations.
- The students will have extensive knowledge of literary terms, major periods, major poets, dramatists, essayists and novelists, literary genres.
- The students will get knowledge about the social, political and literary background of different ages.

CO2.

- The students will get familiar with the main events, conflicts, inventions and literary works

- including poetry, prose, fiction, drama and short stories of modern age.
- They will get acquainted with literary genres like elegy, sonnet, ode, one act play etc.,
 - The students will get familiar with the main events, conflicts, inventions and rich history of Ancient India.
 - Their knowledge about the literary terms, major periods, major poets, dramatists, essayists and novelists, literary genres will further be improved.
 - The students will get knowledge about the social, political and literary background of different ages from 18th century to 20th century

Add-on Course in Communicative English (Skill Enhancement Course)

- The completion of the course will increase students' confidence in speaking publicly and they will be able to articulate clear questions and ideas in class discussion; listen thoughtfully and respectfully to others' ideas; and prepare, organize, and deliver engaging oral presentations.
- The intellectual and professional abilities through effective communicative skills; ensuring high standard of behavioural attitude will be instilled in them and it will make them socially responsible citizens.
- The programme develops competence and communication skill in the language so that they might participate in all India as well as state services and other competitive examinations.

SEMESTER-I

Differential and Integral Calculus

Theory: 5 credits and Tutorials: 0 credits

Theory: 5 hours /week and Tutorials: 1 hours /week

Objective: The course is aimed at exposing the students to some basic notions in differential calculus.

Unit-I

Partial Differentiation: Introduction - Functions of two variables – Neighborhood of a point (a, b) - Continuity of a Function of two variables, Continuity at a point - Limit of a Function of two variables - Partial Derivatives - Geometrical representation of a Function of two Variables - Homogeneous Functions.

Unit- II

Theorem on Total Differentials - Composite Functions - Differentiation of Composite Functions - Implicit Functions - Equality of $f_{xy}(a, b)$ and $f_{yz}(a, b)$ - Taylor's theorem for a function of two Variables - Maxima and Minima of functions of two variables – Lagrange's Method of undetermined multipliers.

Unit- III

Curvature and Evolutes: Introduction - Definition of Curvature - Radius of Curvature - Length of Arc as a Function, Derivative of arc - Radius of Curvature - Cartesian Equations - Newtonian Method - Centre of Curvature - Chord of Curvature.

Evolutes: Evolutes and Involutes - Properties of the evolute.

Envelopes: One Parameter Family of Curves - Consider the family of straight lines - Definition - Determination of Envelope.

Unit- IV

Lengths of Plane Curves: Introduction - Expression for the lengths of curves $y = f(x)$ - Expressions for the length of arcs $x = f(y)$; $x = f(t)$, $y = \phi(t)$; $r = f(\theta)$

Volumes and Surfaces of Revolution: Introduction - Expression for the volume obtained by revolving about either axis - Expression for the volume obtained by revolving about any line - Area of the surface of the frustum of a cone - Expression for the surface of revolution – Pappus Theorems - Surface of revolution.

Outcome: By the time students complete the course they realize wider ranging applications of the subject.

student should be able to understand the idea of derivative, they should be able to explain what a derivative is in terms of the idea of a tangent line to the graph of a function, how a derivative can be used to describe the rate of change of one quantity with respect to another, and how to relate the geometric ideas to the analytic ideas. student should be able to state the definition of derivative and compute with it.

SEMESTER-II

Differential Equations

Theory: 5 credits and Tutorials: 0 credits

Theory: 5 hours /week and Tutorials: 1 hours /week

Objective: The main aim of this course is to introduce the students to the techniques of solving differential equations and to train to apply their skills in solving some of the problems of engineering and science.

Unit- I

Differential Equations of first order and first degree: Introduction - Equations in which Variables are Separable - Homogeneous Differential Equations - Differential Equations Reducible to Homogeneous Form - Linear Differential Equations - Differential Equations Reducible to Linear Form - Exact differential equations - Integrating Factors - Change in variables - Total Differential Equations - Simultaneous Total Differential Equations - Equations of the form $\frac{dx}{P} = \frac{dy}{Q} = \frac{dz}{R}$.

Unit- II

Differential Equations first order but not of first degree: Equations Solvable for p - Equations Solvable for y - Equations Solvable for x - Equations that do not contain x (or y) - Equations Homogeneous in x and y - Equations of the First Degree in x and y - Clairaut's equation. **Applications of First Order Differential Equations :** Growth and Decay - Dynamics of Tumour Growth - Radioactivity and Carbon Dating - Compound Interest - Orthogonal Trajectories

Unit- III

Higher order Linear Differential Equations: Solution of homogeneous linear differential equations with constant coefficients - Solution of non-homogeneous differential equations $P(D)y = Q(x)$ with constant coefficients by means of polynomial operators when $Q(x) = be^{ax}, b \sin ax / b \cos ax, bx^k, Ve^{ax}$ - Method of undetermined coefficients.

Unit- IV

Method of variation of parameters - Linear differential equations with nonconstant coefficients - The Cauchy-Euler Equation - Legendre's Linear Equations - Miscellaneous Differential Equations. **Partial Differential Equations:** Formation and solution - Equations easily integrable - Linear equations of first order.

Outcome: After learning the course the students will be equipped with the various tools to solve few types of differential equations that arise in several branches of science.

Analyze real world scenarios to recognize when ordinary differential equations are appropriate, formulate problems about the scenarios, creatively model these scenarios in order to solve the problems using multiple approaches, judge if the results are reasonable, and then interpret the clearly communicate the results.

SEMESTER-III

Real Analysis

Theory: 5 credits and Tutorials: 0 credits Theory: 5
hours /week and Tutorials: 1 hours /week

Objective: The course is aimed at exposing the student to the foundations of analysis which will be useful in understanding various physical phenomena.

Unit- I

Sequences: Limits of Sequences- A Discussion about Proofs-Limit Theorems for Sequences- Monotone Sequences and Cauchy Sequences -Subsequences-Lim sup's and Lim inf's-Series-Alternating Series and Integral Tests .

Unit- II

Continuity: Continuous Functions -Properties of Continuous Functions -Uniform Continuity - Limits of Functions

Unit- III

Differentiation: Basic Properties of the Derivative - The Mean Value Theorem - *L'Hospital Rule - Taylor's Theorem.

Unit- IV

Integration : The Riemann Integral - Properties of Riemann Integral-Fundamental Theorem of Calculus.

Outcome: After the completion of the course students will be in a position to appreciate beauty and applicability of the course. Describe fundamental properties of the real numbers that lead to the formal development of real analysis. Comprehend rigorous arguments developing the theory underpinning real analysis. Demonstrate an understanding of limits and how they are used in sequences, series, differentiation and integration. Construct rigorous mathematical proofs of basic results in real analysis. Appreciate how abstract ideas and rigorous methods in mathematical analysis can be applied to important practical problems.

SEMESTER-IV

Algebra

Theory: 5 credits and Tutorials: 0 credits Theory: 5
hours /week and Tutorials: 1 hours /week

Objective: The course is aimed at exposing the student to learn some basic algebraic structures like groups, ring etc.,

Unit- I

Groups: Definition and Examples of Groups- Elementary Properties of Groups-Finite Groups - Subgroups -Terminology and Notation -Subgroup Tests - Examples of Subgroups.

Cyclic Groups: Properties of Cyclic Groups - Classification of Subgroups Cyclic Groups.

Unit- II

Permutation Groups: Definition and Notation -Cycle Notation-Properties of Permutations-A CheckDigitSchemeBasedon D_5 . Isomorphisms; Motivation-DefinitionandExamples-Cayley's Theorem Properties of Isomorphisms–Automorphisms-Cosets and Lagrange's Theorem Properties of Cosets 138 - Lagrange's Theorem and Consequences-An Application of Cosets to Permutation Groups-TheRotationGroupofaCubeandaSoccerBall.

Unit- III

Normal Subgroups and Factor Groups: Normal Subgroups-Factor Groups -Applications of Factor Groups - Group Homomorphisms - Definition and Examples -Properties of Homomorphisms -The First Isomorphism Theorem.

Introduction to Rings: Motivation and Definition -Examples of Rings -Properties of Rings - Subrings.

Integral Domains: Definition and Examples - Fields –Characteristics of a Ring.

Unit- IV

Ideals and Factor Rings: Ideals -Factor Rings -Prime Ideals and Maximal Ideals.

Ring Homomorphisms: Definition and Examples-Properties of Ring- Homomorphisms.

Outcome: On successful completion of the course students will be able to recognize algebraic structures that arise in matrix algebra, linear algebra and will be able to apply the skills learnt in understanding various such subjects.

SEMESTER-V

Linear Algebra

Theory: 5 credits and Tutorials: 0 credits

Theory: 5 hours /week and Tutorials: 1 hours /week

Objective: The students are exposed to various concepts like vector spaces , bases , dimension, Eigen values etc.

Unit- I

Vector Spaces: Vector Spaces and Subspaces -Null Spaces, Column Spaces, and Linear Transformations
-Linearly Independent Sets; Bases -Coordinate Systems -The Dimension of a Vector Space

Unit- II

Rank-Change of Basis - Eigenvalues and Eigenvectors - The Characteristic Equation

Unit- III

Diagonalization-EigenvectorsandLinearTransformations-ComplexEigenvalues-Applicationsto
DifferentialEquations.

Unit- IV

Orthogonality and Least Squares: Inner Product, Length, and Orthogonality -Orthogonal Sets -
Orthogonal Projections - The Gram-Schmidt Process.

Outcome: After completion this course students appreciate its interdisciplinary nature.
Students will demonstrate competence with the basic ideas of linear algebra including concepts of linear systems, independence, theory of matrices, linear transformations, bases and dimension, eigenvalues, eigenvectors and diagonalization.
Compose clear and accurate proofs using the concepts of this course.

SEMESTER-VI

NumericalAnalysis

Theory: 5 credits and Tutorials: 0 credits
Theory: 5 hours /week and Tutorials: 1 hours /week

Objective: Students will be made to understand some methods of numerical analysis.

Unit- I

Errors in Numerical Calculations - **Solutions of Equations in One Variable:** The Bisection Method - The Iteration Method - The Method of False Position-Newton's Method - Muller's Method - solution of Systems of Nonlinear Equations.

Unit- II

Interpolation and Polynomial Approximation: Interpolation - Finite Differences - Differences of Polynomials - Newton's formula for Interpolation - Gauss's central differences formulae - Stirling'sand Bessel's formula - Lagrange's Interpolation Polynomial - Divided Differences - Newton's General Interpolation formula - Inverse Interpolation.

Unit- III

Curve Fitting: Least Square Curve Fitting: Fitting a Straight Line-Nonlinear Curve Fitting.

Numerical Differentiation and Integration: Numerical Differentiation - Numerical Integration: Trapezoidal Rule-Simpson's 1/3rd-Rule and Simpson's 3/8th-Rule - Boole's and Weddle's Rule - Newton's Cotes Integration Formulae.

Unit- IV

Numerical Solutions of Ordinary Differential Equations: Taylor's Series Method-Picard's Method- Euler's Methods-Runge Kutta Methods

Outcome: Students realize the importance of the subject in solving some problems of algebra and calculus. Perform curve fitting, explain the least square method, find the determined function using least square method construct a function which closely fits given n-points in the plane by using interpolation method, find the Lagrange polynomial passing through the given points, find the Hermite polynomial passing through the given points, find the cubic spline passing through the given points, investigate the solution of a nonlinear equation, express the intermediate value theorem.

		COURSE OUTCOMES
No. of the Outcome	Course	Course Outcomes
Semester1 DSC Paper -1	History of India(Earliest time to c.700CE)	<ol style="list-style-type: none"> 1. Student will get Knowledge on that about History and its relationship other social sciences and sources of History 2. Student will learn formation of state,the culture of Rigveda,Harrappa and the rise and spread the new religious , Foreign culture impact on India,Mouryan administration and condition also 3.The students of this paper will get to knowledge among the students learn foreign rules and their administration
Semester2 DSC Paper -2	History of India(700CE to 1526)	<ol style="list-style-type: none"> 1.The students of this paper will get to knowledge among the Rajputs ,Delhi Sultanate-Bhakthi movement and their impact on Indian Society 2.Student will get Knowledge on Kakatiya,Vijayanagaras and other Knowledge has given to students for their competitive exams
Semester3 DSC Paper -3	History of India(1526 to1857)	<ol style="list-style-type: none"> 1.The students of this paper will get to knowledge among the Moghal administration, social, Economic and cultural conditions and their art and architecture 2. This paper will give proper idea on Great ruler like Akbar,Shersha and others,and advantage of European power 3. This paper will give Knowledge on foundation and growth of railways, educational reforms and 1857 revolt, and its results raise of nationalism
Semester4 DSC Paper -4	History of India(1858-1964)	<ol style="list-style-type: none"> 1.This paper will give Knowledge on different social Reforms Self-respect movements and their leaders like Phule,Ambedkar 2. The students of this paper will learn about the foundation of INC and Freedom struggle, Role of Gandhi and others peasant workers movements.
Semester5 DSC Paper -5	World History (1453-1815)	<ol style="list-style-type: none"> 1.The student of this paper will gives good knowledge about world geographical discoveries, Renaissance Reformation Movements and its impact on Europe society 2.Student learn about emergency states glories revolution its impact ,Peeter the great ,Federick the great and their achievements 3.This paper will give a complete picture of Feudalism,commercial changes and technological changes in Europe and Nepolian the Great etc.
Semester5 DSE Paper –I(A)	Telangana History Earlist times to 1724 CE	<ol style="list-style-type: none"> 1.This paper will give a basic Knowledge about Telangana Geographical conditions and the History of great rulers ,the social Economical and cultural conditions and idea about temple culture in Telangana 2. The study of this paper very usefualamong the students in multipurpose competitive Exams
Semester 6 DSC Paper -6	World History (1815-1950CE)	<ol style="list-style-type: none"> 1.This paper has given abroad understanding about world politics ,Vienna congress the causes for unification of Italy,Germany. 2. The student of this paper will gives good knowledge about First and Second World war and emergency of UNO and its multidimensional achievements about practicing the world peace

Semester 6 DSE Paper –II(A)	Telangana History 1724 CE-2014	<p>1.The study of this paper will gives a broad information about modern Telangana from the foundation of AsafJahiDynasty ,reformation of separate Telangana state in 2014.</p> <p>2.This paper will gives outstanding information to the students about dalithconditions,industrialdevelopments,modernization of Telangana the conditions of women and their different liberation movement like Telangana peasant armed struggle ,and separate Telangana movement</p>
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B A ECONOMICS

Programme Outcome

After completing the graduation in BA Economics students are able to:

- PO1. Explain, graph, and analyze key economics models
- PO2. Understand current events and evaluate specific policy proposals
- PO3. To address problem that do not have clear economic solutions
- PO4. Develop critical and quantitative thinking skills
- PO5. Communicate effectively in written, oral and graphical form about specific issues
- PO6. Apply economic analysis to everyday problems in real world situations

Programme Specific Outcomes

On Completion of BA Economics,

- PSO1. Understand theoretical and practical aspects of Economics
- PSO2. Evaluate Economic behavior inconsonance
- PSO3. Suggest the policy makers about desirable changes to be made in Micro and Macro-Economic issues.
- PSO4. Gain ability to understand the economic problems in growth and development
- PSO5. Attain Proficiency to analyze the economic decision of Government and non-Govt. entities that correlate with Geographical factors
- PSO8. Understanding Market situation, Transport problem change in Weather Condition, Cropping Pattern, and Natural Calamities and so on

**I Semester
Microeconomics-I**

Course outcome

On completion of the Course, students will:

- CO1. Understand in details with examples Concepts of Micro and Macro Economics. CO2. Deliberate in depth Law of Demand.
- CO3. Understand in depth laws of utility.
- CO4. Learn in details with examples meaning and properties of indifference curve. CO5. Deliberate in depth cost and revenue concepts.
- CO6. Understand the details of meaning and types of markets. CO7. Identify in details with examples perfect competitive market.
- CO8. Specify the details of concepts of Marginal cost and Marginal revenue.

**II – Semester
Macroeconomics**

Course outcome

On completion of the Course, students will:

- CO1. Identify in details with examples Key variables of Macro Economics. CO2. Understand in details with examples Concepts of National Income.
- CO3. Identify in depth Marginal Efficiency of Capital. CO4. Specify the details of Concept of Multiplier.
- CO5. Identify the characteristics of Keynesian Macro Economics. CO6. Deliberate in depth Liquidity Theory of money.
- CO7. Identify the characteristics of Demand for Money.
- CO8. Identify in details with application, if applicable, Concepts of Micro and Macro Economics

III– Semester

Microeconomics-II

Course outcome

On completion of the Course, students will:

- CO1. Learn in depth types of Imperfect Competition.
- CO2. Deliberate the characteristics of Price Discrimination.
- CO3. Identify the classification and characteristics of Kinked Demand Curve. CO4. Identify in details with examples Merits and Public Goods.
- CO5. Write down the classification and characteristics of General Equilibrium of Exchange and Production.
- CO6. Understand in details with examples General Equilibrium of Exchange and Production.
- CO7. Write down in details with examples Marginal Productivity Theory.

IV– Semester

Public Economics

Course outcome

On completion of the Course, students will:

- CO1. Understand the classification and characteristics of Public Economics and Public Finance. CO2. Understand in details with examples Test of maximum social Advantage.
- CO3. Understand in depth Tax and non-Tax Revenue.
- CO4. Identify the characteristics of Central and State financial Relations.
- CO5. Deliberate the classification and characteristics of Central and State financial Relations.

V– Semester

Indian Economy

Course outcome

On completion of the Course, students will:

- CO1. Understand the characteristics of Indian Agricultural policies. CO2. Identify the classification and characteristics of Regional variation.
- CO3. Write down the classification and characteristics of New Industrial Policy. CO4. Specify in depth Public and Private Sector.
- CO5. Identify in depth Monetary Policy. CO6. Understand in depth FDI and WTO.
- CO7. Learn in details with examples Public Debt.

V– Semester

Economics of development and infrastructure (GE)

On completion of the Course, students will:

- CO1. Learn in depth Understand the concept of Economic development and factors affect Development.
- CO2. Deliberate in details with examples Differentiate Economic development and growth. CO3. Identify the characteristics of Demographic Trends.
- CO4. Specify in depth Balanced and Unbalanced Growth Model.
- CO5. Understand the classification and characteristics of Infrastructure facilities.

VI– Semester

Telangana Economy

Course outcome

On completion of the Course, students will:

- CO1. Understand the characteristics of Telangana Demographic features
- CO2. Unemployment and poverty causes and consequences
- CO3. Identify the classification and characteristics of Regional variation.
- CO4. Write down the classification and characteristics of New Industrial Policy. CO5. Specify in depth Public and Private Sector.
- CO6. Learn in details with examples Service and infrastructure sector

VI– Semester

Industrial Economics (GE)

Course outcome

On completion of the Course, students will:

- CO1. Understand the Classification of industries
- CO2. Understand industrial location theories
- CO3. Types of markets and competition within markets
- CO4. Industrial policies and development
- CO5. Industrial financing and various stages,

Zoology Program Outcomes, Program Specific Outcomes and Course Outcomes

1. PO1 - Students gain knowledge and skill in the fundamentals of animal sciences, understands the complex interactions among various living organisms
2. PO2 – Analyze complex interactions among the various animals of different phyla, their distribution and their relationship with the environment
3. PO3 – Apply the knowledge of internal structure of cell, its functions in control of various metabolic functions of organisms.
4. PO4 – Understands the complex evolutionary processes and behaviour of animals
5. PO5 – Correlates the physiological processes of animals and relationship of organ systems
6. PO6 – Understanding of environmental conservation processes and its importance, pollution control and biodiversity and protection of endangered species
7. PO7 – Gain knowledge of Agro based Small Scale industries like sericulture, fish farming, butterfly farming and vermi-compost preparation.
8. PO8 – Understands about various concepts of genetics and its importance in human health
9. PO9 - Apply ethical principles and commit to professional ethics and responsibilities in delivering his duties
10. PO10 – Apply the knowledge and understanding of Zoology to one's own life and work
11. PO11 – Develops empathy and love towards the animals

Program Specific Outcomes:

1. PSO1. Understand the nature and basic concepts of cell biology, genetics, taxonomy, physiology, ecology and applied Zoology
2. PSO2. Analyze the relationships among animals, plants and microbes
3. PSO3. Perform procedures as per laboratory standards in the areas of Taxonomy, Physiology, Ecology, Cell biology, Genetics, Applied Zoology, Clinical science, tools and techniques of Zoology, Toxicology, Entomology, Nematology, Sericulture, Biochemistry, Fish biology, Animal biotechnology, Immunology and research methodology
4. PSO4. Understand the applications of biological sciences in Apiculture, Aquaculture, Agriculture and Medicine
5. PSO5. Gains knowledge about research methodologies, effective communication and skills of problem solving methods
6. PSO6. Contributes the knowledge for Nation building.

Course Outcomes:

Animal Diversity – Invertebrates

- CO1 Describe general taxonomic rules on animal classification
- CO2 Classify Protista up to phylum using examples from parasitic adaptation
- CO3 Classify Phylum Porifera to Echinodermata with taxonomic keys
- CO4 Describe Phylum Nematoda and give examples of pathogenic Nematodes

Ecology, Zoogeography and Animal Behaviour:

- CO1 Distribution of fauna in different realms interaction
- CO2 Understand Animal behaviour and response of animals to different instincts CO3 Interaction of biota abiota
- CO4 Various kinds of Animal adaptations

Animal Diversity – Vertebrates & Developmental Biology:

- CO1 Imparts conceptual knowledge of vertebrates, their adaptations and associations in relation to their environment
- CO2 Classify phylum Protochordates to Mammalia CO3 Complex Vertebrate interactions
- CO4 Basic concepts of developmental biology

Cell Biology, Genetics and Evolution:

- CO1 Structural and functional aspects of basic unit of life i.e. cell concepts CO2 Mendelian and non mendelian inheritance
- CO3 Concept behind genetic disorder, gene mutations- various causes associated with inborn errors of metabolism
- CO4 Theories of Evolution
- CO5 Knowledge of eras and evolution of species

Physiology and Biochemistry:

- CO1 Seeks to understand the mechanisms that work to keep the **human body** alive and functioning CO2 Physiological and biochemical understanding through scientific enquiry into the nature of mechanical, physical, and biochemical functions of humans, their organs, and the cells of which they are composed
- CO3 Interactions and interdependence of physiological and biochemical processes

Applied Zoology

- CO1 Understands concepts of fisheries, fishing tools and site selection
- CO2 understanding concepts of sericulture
- CO3 Understands about Apiculture and methods of extraction of Honey
- CO4 Classifies fowls based on their use and dairy development

Physics Learning Outcomes

Course Title :**Mechanics**

Program: B.Sc. (M.P.C & M.P.Cs)

Semester I

Students

- 1 Learn about Scalars and Vectors, curl, gradient, divergence and curl of the fields and apply them to Stoke's, Gauss' and Green's theorem using Vector Integration.
- 2 Understand Newton' laws of motion with applications, conservation of energy and Momentum, collisions in two and three dimensions and concept of Impact Parameter and scattering cross-section.
- 3 Get knowledge about rigid body and its kinematics, equation of motion for a rotating body, angular momentum and inertial tensor, Euler's equation, precession of a top and Gyroscope.
- 4 Differentiate forces as central, non-central, equation of under Central force and explain Kepler's laws of planetary motion and Coriolis force and its expressions.
- 5 Conceptualize theory of relativity, postulates of Special Theory of Relativity and Michelson Morley experiment, Lorentz transformation and its consequences and the concept of Four vector formalism.

Semester II

Course Title :**Waves and Oscillations**

Program: B.Sc. (M.P.C & M.P.Cs)

Students

- 1 Learn about the Simple Harmonic Oscillator, characteristics of SHM, different pendula and the combination of SH vibrations and to draw Lissajous figures.

2 Study Damped and Forced harmonic oscillators with differential equations, Logarithmic decrement, relaxation time, quality factor and Coupled oscillators.

3 Know about the propagation of transverse waves along a string with modes of vibrations

4 Understands longitudinal vibrations in bars when the bar is fixed at both ends ,free at one end and clamped at the middle.

Semester III

Course Title :**Thermodynamics**

Program: B.Sc. (M.P.C & M.P.Cs)

Students

1 Learn deduction of Maxwell's law of distribution of molecular speeds, transport phenomena, viscosity and diffusion of gases

2 Understand the basics of Thermodynamics, Kelvin's and Clausius statements, thermodynamic scale of temperature, the concept of entropy and its changes.

3 Get knowledge about the thermodynamic potentials, derivation of Maxwell's thermodynamic relations, Joule Kelvin effect and its application.

4 Obtain liquefaction of gas, liquefaction of Hydrogen, Helium, adiabatic demagnetisation and the principal of refrigeration.

5 Know the quantum theory of radiation, derive the Wein's displacement law, Rayleigh-Jeans law, Stefan's law and Planck's law.

6 Explain the postulates of Statistical mechanics, concept of ensembles and probability, Maxwell-Boltzmann's law, Bose-Einstein distribution law, Fermi-Dirac statistics and its application to white dwarfs and neutron stars.

Semester IV

Course Title :**Optics**

Program: B.Sc (M.P.C & M.P.Cs)

Students

1 Learn Principle of Superposition, interference by division of wave front using Fresnel's bi prism and Lloyd's mirror experiment, interference by division of amplitude using colour films, parallel films and Newton's rings experiment and Michelson's interferometer.

2 Distinguish between Fresnel and Fraunhofer diffraction, diffraction due to slit and circular apertures, find the resolving power of grating, Fresnel half period zones and learn about the zone plates.

3 Analyse the polarised lights using polarizer and analyzers, quarter and half wave plates and Laurent's half shade polarimeter.

4 Understand the concepts of aberrations, methods of minimising spherical aberration, coma, astigmatism and distortion, fibre Optics and Principles of fibre communication and types of optical fibres and advantages of fibre communication.

Semester V

Course Title :**Electromagnetism**

Program: B.Sc (M.P.C & M.P.Cs)

Students

1 Learn concept of electric field lines and electric flux, Gauss's law and its application, Electric Potential and its calculation

2 Understand the concept of magnetic flux, Biot-Savart's law, Ampere's law Ballistic Galvanometer and its working principles

3 Get knowledge about the Faraday's laws of induction, Lenz's law, self and mutual induction, continuity equation and Maxwell's equations

4 Obtain Maxwell's equations in vacuum and dielectric medium, polarization of EM waves

Semester V

Course Title :**Solid State Physics (Elective –I)**

Program: B.Sc. (M.P.C & M.P.Cs)

- 1 Conceptualize crystal structure, types of lattices, Brillouin zones, diffraction of X-rays by crystals and Bragg's law. Elementary lattice dynamics, lattice vibrations and phonons, phonon spectrum in solids, Einstein and Debye theories of specific heat of solid and T3 law.
- 2 Learn Magnetic properties of matter, Langevin's theory of para magnetism, Weiss's theory of Ferro magnetism, B-H curve and hysteresis loop, dielectric properties of materials, ClausiusMosotti equation and classical theory of electric polarizability.
- 3 Understand elementary band theory, Kronig Penny model, band gap conductivity of semiconductor, Hall Effect and conductivity by four probe method.
- 4 Explain Lasers and their types , Super conductivity, Meissner effect, BCS theory , D C and A C Josepson effects.

Semester VI

Course Title :**Modern Physics**

Program: B.Sc. (M.P.C & M.P.Cs)

Students

- 1 Learn Atomic Spectra and inadequacy of classical physics, Rutherford Scattering formula, Bohr correspondence principle, Frank Hertz experiment.
- 2 Conceptualize wave particle dual theory of de Broglie, Davisson Germer experiment, Heisenberg uncertainty principle, experiments of Gamma ray microscope and electron diffraction.
- 3 Understand Nuclear physics, nature of nuclear force, liquid drop model , semi-empirical formula and shell model.
- 4 Explain radioactivity, mean life and half-life, alpha ,beta decay, Gamma ray emission, electron – positron pair creation, fission and fusion ,nuclear reactor and classification of elementary particles.

Semester V

Course Title :**Basic Electronics (Elective –II)**

Program: B.Sc (M.P.C & M.P.Cs)

Students

- 1 Understand passive, active elements, power sources, network models, Superposition, Thevenin's, Norton's, Reciprocity and Maximum power transfer Theorems and Z, Y, h-parameters.
- 2 Learn the Band theory of P-N junction, types of semiconductors, Diodes and rectifiers.
- 3 Conceptualize the p-n-p and n-p-n transistors in different configurations, amplifiers and oscillators.
- 4 Explain the Digital electronics , logic gates and De Morgan's laws.

Department of Public Administration

COURSE OUTCOMES

S.No	No. of the Outcome	Course	Course Outcomes
1	Semester1 DSC Paper -1	Basics of Public Administrations	Students will able to 1. Understand the nature and scope of Pub.Administation 2.To acquaint with the theories and approaches concepts and principles of Pub.administration 3.To understand the role of Public services in the emergence and development of Telangana state
2	Semester2 DSC Paper -2	Development Dynamics and Emerging Trends	1.Appriciate the nature scope and changing paradigms of Public.Administration 2.Understand the synthesizing nature of knowledge of Public.Administration from public perspective 3.Grasp the Administrative theories ,concepts and principles to make sense of Administrative practice
3	Semester3 DSC Paper -3	Union Administration	1.To understand to the historical evolution and socio economic poltical ,cultural and Global context of Indian Administration 2.To identifythe transformative role of Indian Administration 3.To make out the multidimensionality of problems and process in Indian Administration
4	Semester4 DSC Paper -4	State Administration	The student able to 1.Discern the connects and disconnects between structure purpose and process and results in Indian Administration 2.Understand the Indian Administration role as the main instrument of state to achieve its development goals 3.Appreciate the varying historical ,socio,economic , poltical and other conditioning factors.
5	Semester5 DSC Paper -5	Human Resource management	1.To comprehend the nature ,scope ,structure process of Human Resource Management 2.To identify the system and processes of financial and material management 3.To understand the changing Paradigms of Resource management
6	Semester5 DSE Paper –I(A)	Rural Governance	The students should able to 1.To understand the concept of democratic decentralization 2.To trace the evolution of local self-government in India 3.To sketch out the new organizational and arrangements of delivery of public welfare programmes.
7	Semester 6 DSC	Financial Material Resource Management	The students should able to 1.Understand the way in which the public power is excercised and public resource are managed and explained

	Paper -6		2.Appreciate the changing paradigms of human resource management
8	Semester 6 DSE Paper –II(A)	Urban Governance	The students should able to 1.Critically appreciate the relationship of local governance and development 2.Appriciate the Rural and Urban institutional managements for development 3.Understand the processes and results of system of delivery of welfare programs

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