POs, PSOs, COs of All Programme for the Academic Year - 2020-21

B.Sc.
Programme Outcomes

PO1: Scientific Knowledge. Apply the knowledge of Science, Mathematics, Engineering & Technology fundamentals to solve the complex problems**.**

PO2: **Design/development of solutions**: Design solutions for complex engineering problems and design system components or processes that meet the specified needs with appropriate consideration for the public health and safety, and the cultural, societal, and environmental considerations.

PO3: Problem analysis: Identify, formulate, research literature, and analyze complex scientific problems reaching substantiated conclusions using first principles of mathematics, natural sciences, and engineering sciences.

PO4: Modern tool usage: Create, select and apply appropriate techniques, resources, and modern technology and IT tools to complex science and technological activities.

PO5: Environment and sustainability: Understand the impact of professional science and technological solutions in societal and environmental contexts and for sustainable Development.

PO6: Individual and team work: Function objectively as an individual and as a member in diverse teams.

PO7: Communication: Communicate effectively on complex science & technology activities with society at large and able to write effective reports and documentation.

PO8. Life-long learning: Recognize the need and ability to engage in independent and lifelong Learning in the context of technological change.

B.Sc. Chemical Technology

Program Specific Outcomes:

Students will be able to:

PSO1: Understand the basic concepts of Maths, Physics and Chemistry to apply in the field of Chemical Technology.

PSO2: Understand the basic concepts of various unit operations and unit processes in Chemical Technology

PSO3: Apply the theoretical knowledge, problem solving techniques and skills acquired through practicals in Chemical and Pharmaceutical industries.

PSO4: Design the equipment required to carry out the various unit operations and unit processes in Chemical and Pharmaceutical industries.

Physics I

CO1: Apply the laws of motion on variable mass systems and explain the conservation principles of mechanical energy and momentum

CO2: Distinguish the mechanics of rigid bodies with respect to kinematics.
Analyze the principles of interference optics.

CO3: Explain the mechanics of continuous media and solve problems.

CO4: Categories different semiconductors of solids and analyze basic electronics of rectifiers

and diodes.

CO5: Apply the principles of fiber optics for signal propagation.

Physics II

CO1: Explain the fundamentals of vibrations and the concept of Meissner Effect & BCS theory of superconductivity.

CO2: Compare Damped and forced oscillations and distinguish different types of lasers and its applications.

CO3: Distinguish Fresnel's, Fraunhofer diffraction and analyse wavelength of monochromatic light and Grating. Analyze ultra-Sonic's to determine velocity of sound in different media.

CO4: Analyze Polarization, Double refraction, optical activity and identify its role in designing Nichol's prism, Half-shade polarimeter.

CO5: Apply crystallography principles of solid state physics to explain packing fractions and crystal structures of solids by Laue, Powder diffraction methods.

Physics III

CO1: Use Gauss's Law principle to explain charged sphere, cylinder, and potential due to charged spherical conductor and Solve problems.

CO2: Analyze Nano science technology and survey different types of Nano materials, Synthesis of Nano particles and its applications.

CO3: Compare various types of transistors and analyse CB-CE-CC configurations, Hybrid parameters.

CO4: Explain the physics of Passive Electronic components and Magneto statics.

CO5: Classify digital electronics of binary number system, its conversions and analyse different amplifiers, Oscillators.

Physics IV

CO1: Analyze moving charge in electric and magnetic field, Identify it's role in particle accelerators, magnetic field due to straight wire and circular coil.

CO2: Compare the effects of electromagnetic induction in moving conductors, solenoid, Transformers and survey digital electronics of Logic Gates.

CO3: Compare varying and alternating currents through L-R, L-C, C-R and L-C-R circuits.

CO4: Apply the Principles of Quantum mechanics and wave mechanics in solving quantum problems.

CO5: Analyze Nuclear structure, Binding energy, nuclear forces and survey different nuclear models.

Chemistry I

CO1: Analyse the structure of various molecules/ions based on LCAO,MOT.VESPER theory.

CO2: Explain the synthesis and structure of S & P block elements

CO3: Explains the fundamentals and understanding of extraction of metals and alloys

CO4: Explain the fundamentals of Organic molecules

CO5: Explain the Organic re4action reaction mechanisms

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Chemistry II

CO1: Analyse the energy change in a given physical/chemical processes
CO2: Apply the concept of feasibility of processes
CO3: Examine the Colligative properties by various experiments
CO4: Summarisation of Basic gas laws and their deviation and demonstration
CO5: Explain the various phases in a heterogeneous system, apply the concept to separate various phases.

Chemistry III

CO1: Explain synthesis and properties of Halogens, Alcohols, Phenols and Ethers
CO2: Compare the synthesis and properties of Aldehydes and ketones
CO3: Explain the preparation, properties of 'd' and 'f' Block elements
CO4: Compare the electrical conductivities of various Conductors and their related laws
CO5: Evaluate Cell Potential, Compare various Electrodes and their functions

Chemistry IV

CO1: Compare preparation and properties of Aliphatic and Aromatic Carboxylic Acids
CO2: Compare Synthesis and properties of Nitro compounds and Hetero cyclic compounds
CO3: Synthesis and structural analysis of Carbohydrates and Amino Acids
CO4: Interpretation of Metal Complexes based on LFT, CFT and MOT
CO5: Application of Catalyst, Reaction mechanism of complexes and OMC, preparation and properties and their uses

Chemistry V

CO1: Determine the Extraction, structure and uses of Alkaloids, Terpenoids, Steroids and Dye stuffs
CO2: Application of Polymers, development of Polymers and Rubbers
CO3: Classification of Drugs, demonstration of drugs and explanation of their action
CO4: Explain the Fundamental concepts of Spectroscopic techniques
CO5: Evaluate Order and Molecularity of reactions, application of Photo chemical reactions

Chemical Process Principles

CO1: Solve problems to calculate composition of solids and fluids and density of gaseous mixtures.
CO2: Apply Roult's Law and Dalton's Law to solve problems in gaseous mixtures
CO3: Solve material balance problems with and without chemical reactions.
CO4: Apply energy balance to calculate enthalpy changes
CO5: Use energy balance to calculate enthalpy changes accompanying chemical reactions.

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Chemical Reaction Engineering

CO1: Classify chemical reactions, define rate equation and can test mechanism.
CO2: Explain the dependency of rate constant on temperature from different theories and Calculate rate constant
CO3: Use rate equation to calculate the specific rate constant and the order of the reaction for irreversible reactions in case of constant volume Batch Reactor.
CO4: Use rate equation to calculate the rate constant for reversible reactions in case of Constant Volume Batch Reactor and rate constant in case of Variable Volume Batch Reactor.
CO5: Use the performance equation to design single ideal reactors.

Environmental Engineering and Safety

CO1: Classify the industrial effluents and Oxygen Demands.
CO2: Select a suitable equipment and treatment process to control pollution caused by industrial liquid wastes.
CO3: Select a suitable equipment and treatment process to control pollution caused by industrial gaseous effluents and solid waste.
CO4: Explain the safety aspects of a chemical industry such as hazards involved in the chemical industry and preventive measures to be taken.
CO5: Identify the effects of toxic agents on human health and will be able to understand how to handle flammable materials in chemical industries

Heat Transfer

CO1: Apply Fourier's law of heat conduction to calculate rate of heat transfer by conduction in solids.
CO2: Apply the different equations for different situations to calculate the rate of heat transfer through fluids without phase change by convection.
CO3: Explain heat transfer to fluids with phase change.
CO4: Explain the construction and working of Heat Exchangers.
CO5: Explain the construction and working of evaporators.

Refractory Technology

CO1: Classify and select the refractory materials
CO2: Describe the manufacturing procedure, properties and uses of some important refractory materials.
CO3: Identify the refractory's used in Iron and Steel, Glass and Cement industries.
CO4: Explain the testing procedures for some important properties of refractory materials and describe the properties and uses of insulating refractories.
CO5: Choose the special refractories for specified applications and describe refractory cement.

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Mathematics- I

CO1: Construct the vector-valued functions of a real variable and their curves, Gradient vector fields and constructing potentials. Define the directional flow especially in the description of electromagnetic fields, fluid flow in physical sciences.
CO2: Identify the importance of vector fields in day to day life. Calculate the mass, area and momentum and also measure the energy of steady flows using integrations.
CO3: Develop factual knowledge including the mathematical notation and terminology in geometry; points, lines, and angles; planar figures.
CO4: Describe the surface area of sphere - great circle and volume of sphere, cone.
CO5: Apply matrix theory to solve homogeneous and non-homogeneous system. Define Eigen values and Eigen vectors.

Mathematics- II

CO1: **Classify** the differential equations with respect to their order and linearity. Solve differential equations of first order using numerical and analytical methods such as Integrating Factors.
CO2: **Solve** higher order non- Homogeneous Equations with Constant Coefficients. Obtain exact and numerical solutions using differential equations technology.
CO3: **Solve** higher order non- Homogeneous Equations with variable Coefficients. Obtain exact and numerical solutions using differential equations technology.
CO4: **Identify** the relationship between a real function and its derivative at a point which in turn helps them solve the system using integrations.
CO5: **Identify** different tests for convergence and divergence of a given series.

Mathematics- III

CO1: **Categorize** the theoretical and practical aspects of the use of numerical methods.
CO2: **Explain** how the common numerical methods and are used to obtain approximate solutions to intractable mathematical problems.
CO3: **Develop** numerical methods for various mathematical operations and tasks, such as interpolation, differentiation, integration, the solution of linear and nonlinear equations, and the solution of differential equations.
CO4: **Analyze** and evaluate the numerical solution of algebraic equations.
CO5: **Develop** numerical methods to fit a curve within the given points.

Mathematics- IV

CO1: State the definition of a simple group, calculate composition factors and composition series of certain groups. Use the subgroup criterion to prove that various subsets are subgroups of some given group.
CO2: Explain whether a given group is cyclic, and given a finite cyclic group, find a generator for a subgroup of a given order.
CO3: Identify homomorphism in a group, determine whether or not they are isomorphic.
CO4: **Analyse** the Fourier transform of elementary functions from the definition.
CO5: Solve Wave, heat and Laplace equations using Fourier transform.

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Chemical Technology-II

CO1: Explain Nuclear materials
CO2: Explain natural product industries, soaps and detergents
CO3: Describe microware, biotechnology, isolation, cultivation and growth of micro organisms
CO4: Explain pulp and paper industry
CO5: Explain food industry

Instrumentation & Process Control

CO1: Explain the qualities of measurement
CO2: Choose a suitable thermometer for a given application and describe the methods for composition analysis of moisture in gases
CO3: Explain various pressure and vacuum measurement instruments and process instrumentation
CO4: Describe the role of process dynamics and control
CO5: Describe controllers and final controller elements

Mass Transfer Operations--I

CO1: Describe the principles of diffusion
CO2: Explain the principle of distillation and types of distillation
CO3: Analysis of fractionating column by Mecab Thiele Method
CO4: Explain the principle and applications of Leaching process
CO5: Explain the principles of extraction and extraction equipment

Mass Transfer Operations - II

CO1: Explain the principle and applications of absorption and will be able to design packed column
CO2: Describe humidity and its measurement and equipment for humidification operations
CO3: Choose drying equipment and will be able to do calculations in drying
CO4: Choose suitable equipment to carry out adsorption
CO5: Explain membrane separation process and will be able to classify membranes

Organic Surface Coatings Technology

CO1: Describe the organic surface coatings.
CO2: Explain pigments and extruders.
CO3: Explain resins, plasticizers and additives.
CO4: Explain paints with reference to testing and applications.
CO5: Select coatings for different applications in chemical industries.

Chemical Technology-I

CO1: Basic knowledge of describing a chemical industry. Explain manufacturing of sulphur and sulphuric acid
CO2: Explain manufacture of industrial fuel gases. Explain manufacture of oxygen
CO3: Explain manufacture of ammonia & urea. Explain manufacture of Nitric acid &

Ammonium nitrate

CO4: Explain manufacture of Chloro alkali industries

CO5: Explain manufacture of cement. Explain manufacture of magnesium compounds from sea water

Chemical Technology-II

CO1: Identify basic refinery operations. Explain manufacturing of Methanol, Vinyl chloride

CO2: Explain the manufacturing of Acetone, Acrylonitrile Explain the manufacture of Isoprene, Butadiene.

CO3: Explain the manufacture of aromatic hydrocarbons

CO4: Explain the manufacture of pesticides.

CO5: Explain the manufacture of polymers.

Fluid Mechanics

CO1: Understand of basic unit and dimensions in fluid mechanics. Describe basic principles of fluid mechanics

CO2: Identify fluid flow problems with the application of the momentum and energy equations. Describe friction and losses in fluid flows.

CO3: Capability to analyze pressure drops in packed bed Knowledge of fluidization.

CO4: Capability of measuring flows Knowledge of flow meters.

CO5: Describe piping layout. Describe equipment's in transportation of fluids

Solar Processing Technologies

CO1: Identify different forms of energies. Describe transformation of energy.

CO2: Identify the need for energy conservation. Describe significance of solar energy

CO3: Describe harnessing of solar energy.

CO4: Describe applications of solar energy

CO5: Identify ISO standards for solar applications

Mechanical Unit Operations

CO1: Explain agitation equipment, flow patterns and design of power required for agitation equipment. Explain mixers for pastes and free flowing solids

CO2: Identify the need for screen analysis and storage of solids. Explain conveying systems.

CO3: Explain size reduction equipment's. Capability of problem solving pertaining to size reduction equipment's

CO4: Identify the need for size separations. Explain screening equipment's

CO5: Explain centrifugal separation process. Explain crystallization equipment.

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B.Sc Agricultural Science and Rural Development

PSO1: Knowledge on crop production and crop improvement techniques.
PSO2: Knowledge on farm management economics, various agricultural extension methods and communication techniques to serve farming community and industries.
PSO3: To develop scientific, technical and practical skills related to lab and field in various plant and animal related courses with critical thinking and strong ethical foundation.
PSO4: Develops entrepreneurship qualities at various levels by taking apt decisions to enhance the success of an agricultural enterprise or an organization.

Fundamentals of Agronomy & Agricultural Heritage

CO1: Classify agroclimatic zones of India and Telangana, explain various methods of sowing and tillage.
CO2: List of various methods of weed control and irrigation
CO3: Classify manures and fertilizers and explain plant ideotypes
CO4: Explain various practices of indigenous technology
CO5: Describe agricultural heritage, different civilizations and history of agriculture development

Fundamentals of Genetics

CO1: Express knowledge on Mendel's Laws
CO2: Classify types of alleles
CO3: Explain chromosomal aberrations and solves problems on chi square
CO4: Classify mutations and extra chromosomal inheritance
CO5: Analyzes the structure and expression of gene

Fundamentals of Soil Science

CO1: Defines soil and describes different soil forming processes, explains soil profile and differentiates surface soil and subsurface soil
CO2: Explain different Physical properties of soil and their influence on crop growth
CO3: Explain different chemical and biological properties of soil and its importance in agriculture
CO4: Differentiates and explains role of organic matter and humus. Describes carbon cycle and C:N ratio
CO5: Classify different soil groups of India, Telangana and A.P

Introduction To Plant Pathogens

CO1: Illustrates pathogenic fungi and types of reproduction in fungi
CO2: Classify Kingdom Fungi into phylum, sub phylum and orders
CO3: Recognizes phylum Ascomycota and Basidiomycota with examples
CO4: Differentiates Rust, Smut and Bunt Fungi
CO5: Illustrates various plant parasitic viruses and nematodes

Fundamentals of Agricultural Economics

CO1: Explain basic concepts in micro economics
CO2: Distinguish consumer behaviour analysis, IC analysis and demand analysis
CO3: Interrelate among production, cost concepts, supply and market structure
CO4: Illustrate the functions of money and national income

CO5: Apply various economic systems in daily life

Fundamentals of Horticulture

CO1: Define various branches.
CO2: Distinguish methods of Propagation.
CO3: Identify and explain various vegetative propagation Method
CO4: Distinguish and differentiate growth regulators and effects
CO5: Classify and compare irrigation and fertilizer application methods

Rural Sociology and Educational Psychology

CO1: Describe the importance of rural sociology in agriculture extension.
CO2: Explain different concepts in rural sociology like social stratification, culture, social institutions, social change and social ecology
CO3: Explain the concept of rural development in India.
CO4: Explain the importance of educational psychology in agricultural extension with special emphasis on leadership, personality and motivation
CO5: Apply various theories of motivation, intelligence, process of teaching and learning with special reference to extension teaching.

Agrometeorology & Climate Change

CO1: Define meteorology, climatology, Agrl. Meteorology, wind, types of wind and describe structure of atmosphere
CO2: Explain solar radiation, factors affecting distribution of solar radiation, atmospheric temperature and its importance
CO3: Differentiate between precipitation and condensation and identify their different forms
CO4: Classify and explain characteristics of different clouds. Explain south west and north east monsoons
CO5: Identify weather hazards and categorize types of weather forecasting

Introduction To Forestry

CO1: Defines various branches of forestry, silviculture and its classification
CO2: Explain various forest policies and types of regeneration
CO3: Describes different tending operations followed in forestry
CO4: Explain importance of agro forestry in India
CO5: Select suitable practices for raising Subabul and Eucalyptus

Agricultural Microbiology

CO1: Describe various contributions of eminent scientists in microbial world.
CO2: Explain morphological types of bacteria, bacteria cell structure microbial nutrition, metabolic pathways & growth cycle of bacteria.
CO3: Explain bacterial genetics, role of microbes in fertility of soils and plant growth, cycle of major elements Co2, N2.
CO4: Differentiate types of fermentation and identify PGPR organisms and biological nitrogen fixation
CO5: Prepare Biofertilizers, biopesticides, silage, biofuel, biogas, biomanures and their

production technologies,

Fundamentals Of Entomology

CO1: Explains the history, Scope and importance of entomology and insect body wall and body segmentation
CO2: Identify and recognize various structures and functions of insect antenna, legs, wings and different types of larval and pupal forms of insect.
CO3: Illustrates various physiological systems of insect body
CO4: Describes the characters of insects belongs to the orders Orthoptera, Isoptera. Thysanoptera, Lepidoptera and develops ability to identify various insects
CO5: Identify the characters of insects belongs to the orders Coleoptera, Hymenoptera, Diptera, Hemiptera and develops ability to identify various insects

Fundamentals of Crop Physiology

CO1: Explain the importance of crop physiology, crop water relations and seed germination
CO2: Apply the knowledge of photosynthesis and respiration in increasing crop productivity
CO3: Apply the knowledge of nutrio-physiology and flowering physiology in increasing crop productivity
CO4: Explains the role of plant growth regulators in agriculture and horticulture
CO5: Analyze growth and development of major crops

Soil and Water Conservation Engineering

CO1: Explain importance of soil and water conservation, water erosion
CO2: Explain erosion control measures
CO3: Explain irrigation water measurement techniques
CO4: Describe irrigation pumps and discharge calculation
CO5: Explain drip and sprinkler irrigation system

Protected Cultivation And Secondary Agriculture

CO1: Describe the various types of greenhouses
CO2: Illustrate structure and different materials for construction of greenhouse
CO3: Explain the different irrigation systems used in greenhouse
CO4: Explain winnowing, winnowers and moisture measurement
CO5: Explain types of mechanical drying and handling equipment

Fundamentals of Plant Biochemistry And Biotechnology

CO1: Identify the structures and importance of carbohydrates and lipids
CO2: Classify peptides, proteins and enzymes
CO3: Explain structure of nucleic acids and illustrate metabolism
CO4: Prepare nutrient media and use of various cultures
CO5: Analyze genetic engineering techniques

Crop Production – I

CO1: Explains various crop production techniques from sowing to harvest for Rice and wheat
CO2: Explains various crop production techniques from sowing to harvest for maize and sorghum
CO3: Explains various crop production techniques from sowing to harvest for pearl millet, finger

millet, foxtail millet, kodo-millet, proso-milllet, little-millet

CO4: Explains various crop production techniques from sowing to harvest for Red gram, Bengal gram, green gram, black gram, cowpea, horse gram

CO5: Explains various crop production techniques from sowing to harvest for different forage crops

Dryland Agriculture and Water Shed Management

CO1: Differentiate dry farming, dryland farming and rainfed farming, classification of Land Use and various types of drought

CO2: Identify various dry farming implements and describe various types of tillage

CO3: Explain various alternate land use systems and Dryland technologies for black and red soils

CO4: Classify of various types of erosion and mulches

CO5: Choose various moisture conservation measures and concepts of watershed management

Weeds and Their Management

CO1: Classify weeds based on various criteria

CO2: Classify different methods of weed control and herbicides

CO3: Analyze the mode of action of herbicides and errors in herbicide application

CO4: Explain selectivity of herbicides and interaction of herbicides with fertilizers and agrochemicals

CO5: Compare weed management practices of cereals, pulses, oil seeds, vegetables and orchards

Cell Biology and Plant Genetics

CO1: Identify and recognize the function of various cell organelles

CO2: Explain the process of cell division and to explain chromosomal abberation

CO3: Sketch the nature of genetic material and recognize the nature of DNA

CO4: Distinguish between allelic and non-allelic interaction

CO5: Analyze the structure and expression of gene

Introduction to Plant Pathology & Plant Disease Control

CO1: Illustrates pathogenic fungi and types of reproduction in fungi

CO2: Classify Kingdom Fungi into phylum, sub phylum and orders

CO3: Recognizes phylum Ascomycota and basidiomycota

CO4: Differentiates rust, smut and bunt Fungi

CO5: Illustrates various plant parasitic viruses and nematodes

Principles of Crop Physiology

CO1: Explain the importance of crop physiology, crop water relations and seed germination

CO2: Apply the knowledge of photosynthesis and respiration in increasing crop productivity

CO3: Apply the knowledge of nutrio-physiology and flowering physiology in increasing crop productivity

CO4: Explains the role of plant growth regulators in agriculture and horticulture

CO5: Analyze growth and development of major crops

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Agricultural Chemicals

CO1: Differentiate organic compounds and inorganic compounds
CO2: Classify inorganic insecticides with examples
CO3: Illustrate various organic, natural and synthetic insecticides
CO4: Understands various organochlorine, carbamate and phosphorus compounds
CO5: Analyzes various fungicides and pesticide residues influence on environment

Irrigation Water Management

CO1: Classify major, medium and minor irrigation projects
CO2: Solve sample problems on available soil moisture and explain various soil moisture constants
CO3: Differentiate Net and Gross Irrigation requirements and sub divide indirect methods of soil moisture estimation
CO4: Judge different approaches of scheduling irrigation and different methods of irrigation
CO5: Explain various irrigation efficiencies and water management practices for different crops.

Soil Fertility, Manures and Fertilizers

CO1: Define and list out macro and micronutrient
CO2: Differentiate and Classify Manures and Fertilizers and different composting methods
CO3: Explain characteristics and manufacturing process of nitrogenous, phosphatic and potassic fertilizers.
CO4: Differentiate and classify complex, mixed and bio-fertilizers
CO5: Compare and judge various methods of soil fertility evaluation

Entomology – II(Taxonomy And Pest Control)

CO1: Explains the principles of insect taxonomy and classify the class insecta and describes the characters of insects belongs to the orders Coleoptera, Lepidoptera, Isoptera and develops ability to identify various insects.
CO2: Describes the characters of orders Hemiptera, Dictyoptera and Thysanoptera and develops ability to identify various insects
CO3: Identify the characters of orders Hymenoptera, Diptera and Orthoptera and develops ability to identify various insects
CO4: Explain the methods of pest control and apply knowledge on application of pest control methods
CO5: Apply the concepts of IPM and recent methods of pest control

Introduction to Plant Biotechnology

CO1: Choose different sterilization techniques and cultures
CO2: Identify techniques in tissue culture
CO3: Explain methods of somatic hybridization and cryopreservation
CO4: Identify methods of gene transfer
CO5: Explains procedure of PCR

Rural Development

CO1: Describe the different concepts involved in rural development and memorize different rural

development programs of India during pre-independence and post-independence era.
CO2: Appraise the linkage between democratic decentralization and rural development
CO3: Select the different agricultural development programs and social justice and poverty alleviation programmes in India
CO4: Distinguish between administration and management
CO5: Choose people's participation as one of the major factors for successful implementation of rural development programmes with special focus on women

Crop Production-II (Oil Seeds & Commercial Crops)

CO1: Explains various crop production techniques from sowing to harvest for Groundnut, Sesame, Soybean, Sunflower
CO2: Explains various crop production techniques from sowing to harvest for Safflower, Castor, Rapeseed & Mustard, Linseed, Niger
CO3: Explains various crop production techniques from sowing to harvest for Cotton and Sunhemp
CO4: Explains various crop production techniques from sowing to harvest for Jute, Mesta, Agave
CO5: Explains various crop production techniques from sowing to harvest for Sugarcane, Sugar-beet, Tobacco

Principles of Plant Breeding

CO1: Recognizes the benefits of plant breeding and crop genetic resources
CO2: Interpret the methods of breeding and to illustrate the methods
CO3: Explain the importance of different breeding methods
CO4: Compare the methods of population improvement
CO5: Formulate special breeding methods

Crop Pests and Their Management

CO1: Identify the host range, nature of damage, damaging symptoms, life cycles and management of different pests of cereal crops.
CO2: Identify the host range, nature of damage, damaging symptoms, life cycles and management of different pests of Fiber crops, oilseeds and pulse crops
CO3: Identify the host range, nature of damage, damaging symptoms, life cycles and management of different pests of Coconut and fruit crops.
CO4: Identify the host range, nature of damage, damaging symptoms, life cycles and management of different pests of vegetable crops
CO5: Identify the host range, nature of damage, damaging symptoms, life cycles and management of pests of stored products

Production and Farm Management Economics

CO1: Analyze laws of returns and factor product relationship
CO2: Judge input output relationship in agricultural production
CO3: Apply cost analysis in agricultural production
CO4: Make up law of equi-marginal returns in agricultural production
CO5: Distinguish types and systems of farming

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Farm Equipment and Machinery

CO1: Generalizes types of engines and solves problems related to mechanical power
CO2: Explain fuel system, cooling system and solves problems on tractor power
CO3: Differentiates types of ploughs and their parts
CO4: Classify various harrows, cultivators and other implements
CO5: Sketches various fertilizer and seeding equipments

Production Technology of Vegetables, Aromatics And Medicinal Plants

CO1: Describe various production techniques in Solanacious vegetables
CO2: Apply various cultural operation to produce cruciferous vegetable
CO3: Explain different cultivation practices in leguminous vegetables
CO4: Explain techniques of producing Essential oil from Aromatic crops
CO5: Appraise Importance of medicinal values of different plants

Agricultural Extension & Programme Planning

CO1: Explain the importance of extension education in agriculture sector.
CO2: Organize different agricultural extension methods with reference to group contact methods.
CO3: Organize different agricultural extension methods with reference to mass contact methods.
CO4: Apply the principles of journalism in Agricultural extension and prepare different types of Audio Visual aids
CO5: Solving of the problems of villages by applying Participatory Rural Appraisal (PRA) technique

Seed Science and Production Technology

CO1: Describes concepts of seed quality and genetic purity
CO2: Interpret the varietal and hybrid seed production techniques of various crops
CO3: generalize various techniques of hybrid seed production
CO4: Explains steps in seed processing and field inspection
CO5: Judges IPRs and their relevance in seed industry

Agricultural Cooperation, Finance & Marketing

CO1: Appraise the agricultural co-operation movement in India
CO2: Illustrate cooperative credit structure
CO3: Distinguish between 3R's, 5C's and 7P's
CO4: Differentiate between regulated and co-operative markets
CO5: Combine marketable and marketed surplus in agricultural marketing

Crop Diseases & Their Mangement

CO1: Identify different diseases of cereal crops and gain knowledge about their management.
CO2: Identify different diseases of oil seed crops and gain knowledge about their management.
CO3: Identify different diseases of Pulses, Flower and Spices crops and gain knowledge about their management.
CO4: Identify different diseases of Vegetable crops and gain knowledge about their management.
CO5: Identify different diseases of Horticulture crops and gain knowledge about their management.

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Production Technology of Fruits, Spices And Plantation Crop

CO1: Plan for laying out of orchard
CO2: Identify problems in raising of Mango, Banana, Sopota crops
CO3: Demonstrate the methods of planting and regulating flowering and fruiting in citrus, Guava, Papaya and pineapple, to select suitable training and pruning methods for Grape, Pomegranate and Ber.
CO4: Distinguish harvesting indices for Ginger, Turmeric, Pepper and cardamom for monetaryreturns
CO5: Demonstrate Production and processing of plantation crops.

Livestock and Fish Production Management

CO1: Explains role of livestock in Indian economy and statistics of livestock population
CO2: Explains maintenance of farm records, their importance and utility
CO3: Differentiates digestive systems of ruminants, swine and poultry
CO4: Describes Broiler & Layer management along with disease prevention
CO5: Describes fishery resources in India and the statistics of fishery in India

Applied Statistics

CO1: Explains the importance of concept of variability, measures spread or dispersion, understands and identity its cause to provide a basis for action, describes importance of normal distribution in statistics
CO2: Interprets meaning of correlation co-efficient in contex, identification of two variables, technology to find 'r'
CO3: Judges appropriate method and identify problem and apply test via p value and CI
CO4: Judges appropriate chi-square test for independence and goodness of fit
CO5: Analyzes the results of designed experiment in order to conduct the appropriate statistical analysis of data.

Principles of Food Processing and Preservation

CO1: Define food processing and preservation, Classify foods for processing and preservation
CO2: List out methods of food preservation
CO3: Explain processing methods of cereals, millets and legumes
CO4: Explain processing methods of fruits and vegetables and oil seeds
CO5: Explain processing methods of spices and plantation crops

Agricultural Waste Management

CO1: Describes impact of agricultural waste on environment, kinds of wastes and role of soil and plants in waste management
CO2: Explains impact of agricultural waste on soil quality and plant quality and sources of waste from agriculture, agro industries and urban waste
CO3: Explains utilization of agricultural waste and in-situ management and composting types
CO4: Describes Influence of Agricultural waste on water, air and animal resources

CO5: Suggests waste management methods and techniques

Rural Agricultural Work Experience Programme

CO1: Apply the knowledge of the various agricultural operations involved in Crop Production
CO2: Apply the knowledge of Crop Protection techniques in the host farmers field
CO3: Survey on socio economic status of farmers in the village
CO4: Organize method demonstration and agricultural exhibition in the villages for benefit of farmers
CO5: Prepare report in prescribed format in crop production, crop protection, Agrl. Economics, Ag. Extension and KVK activities

Industry Internship Programme

CO1: Select the agro-industry based on the interest of the students
CO2: Apply various techniques and skills in Agro-Industry
CO3: Formulate research proposal
CO4: Makeup of project report
CO5: Defend the research project

Farming Systems and Sustainable Agriculture

CO1: Describe concepts of farming systems and its components
CO2: Explains concepts, components and factors affecting sustainable agriculture
CO3: Explains environmental pollution in agro ecosystem, excess use of fertilizers and pesticides and control measures
CO4: Develop methods and practices for managing and conserving natural resources
CO5: Explain and Apply knowledge of organic farming methods for sustainable agriculture

Agri Business Management and International Trade

CO1: Explain structure of Agri-business management
CO2: Prepare Balance sheet in Agri business
CO3: Plan for financial management in Agri business
CO4: Develop agro-based industries
CO5: Appraise the role of international trade in agri-business

Economic Entomology

CO1: Illustrates the concepts of morphology of silkworms, Moriculture and ability to identify, recognize and manage the pests and diseases of mulberry.
CO2: Apply the concepts of silkworm rearing, management of silkworm pests and diseases and imparts knowledge on rearing equipment and appliances
CO3: Describes the concepts of silkworm moulting, spinning and cocoon formation and post cocoon technology.
CO4: Demonstrate the concepts of honey bee rearing and interpret the uses of byproducts
CO5: Analyze the process of Lac culture its uses and describes the importance of vermi-culture.

Communication and Transfer of Agricultural Technologies

CO1: Recognize the importance communication in transfer of agricultural technologies.
CO2: Explain the process of diffusion and adoption of innovations.

CO3: Differentiate between an entrepreneur and a manager.
CO4: Apply the concepts of generation, incubation and commercialization of business ideas in the development of entrepreneurship
CO5: Formulate the project proposal for setup industry

Post Harvest Technology of Field Crops
CO1: Explain different types of threshers
CO2: Explain decorticators, shellers, crushers and ginning of cotton
CO3: Use of different drying methods
CO4: Explain parboiling and milling of paddy
CO5: Design different grain storage structures

Livestock and Fish Production Management
CO1: Explains role of livestock in Indian economy and statistics of livestock population
CO2: Explains maintenance of farm records, their importance and utility
CO3: Differentiates digestive systems of ruminants, swine and poultry
CO4: Describes Broiler & Layer management along with disease prevention
CO5: Describes fishery resources in India and the statistics of fishery in India

Floriculture and Landscaping
CO1: Explain special techniques involved in production of commercial flowers
CO2: Select suitable practices for raising Gladiolus, carnation, Tuberose, Jasmine
CO3: Describe various production techniques in Gerbera, Marigold, crossandra, Antirrhinum
CO4: Explain various features of ornamental Gardening.
CO5: Design various Greenhouses for protected cultivation**.**

Fundamentals of Horticulture
CO1: Define various branches.
CO2: Distinguish methods of Propagation.
CO3: Identify and explain various vegetative propagation Method
CO4: Distinguish and differentiate growth regulators and effects
CO5: Classify and compare irrigation and fertilizer application methods, Explain various features of ornamental Gardening

B.Sc. Computer Science and Engineering

Program Specific Outcomes:

Students will be able to:

PSO1: Apply computer science programming languages and algorithms, as well as mathematical, physics models for developing solutions to the real world problems.
PSO2: Demonstrate the fundamentals of Computer Organization, Operating Systems, Computer Programming and Networking related concepts of computer science and apply the knowledge in designing and building software solutions.

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PSO3: Identify, formulate and analyze computer programs in the areas related to networking, web designing, cloud computing, and data mining of varying complexity.
PSO4: Ability to comprehend and write effective project reports in multidisciplinary environment in the context of changing technologies

Physics

CO1: Apply Fundamental electromagnetic concepts for various applications including wireless and optical communications.
CO2: Design different applications of lasers and fiber optics in the field of industry, medical and telecommunications
CO3: Distinguish the various crystalline materials and to understand the crystallographic techniques
CO4: Apply concepts of wave and particle nature of material particles for various engineering applications.
CO5: Develop different devices with more efficiency using superconducting and Nano materials.

Mathematics

CO1: Choose appropriate data structures to represent data items in real world problems
CO2: Illustrate non-linear data structures like linked list
CO3: Organize the data using sorting in various linear data structures and determine time complexity.
CO4: Construct data with non-linear data structure using trees.
CO5: Explain the concept of graphs and B-trees

Electronic Devices and Circuits

CO1: Explain the various voltages across and current flow through electronic devices in various configurations, junction with varying doping concentrations
CO2: Design and construct amplifier and oscillator circuits and differentiate between them
CO3: Design and construct a DC power supply
CO4: Analyze various factors influencing a transistor.
CO5: Analyze the characteristics of amplifiers, timers and oscillators

Problem Solving and Programming in 'C'

CO1: Explain the basic introduction of computer and programming languages
CO2: Categorize different data types, operators and data input /output functions in 'C'.
CO3: Develop programs using 'C' control structures, arrays and string concept.
CO4: Sub divides larger problems into smaller ones using 'C' functions.
CO5: Create programs using the concept of structures, union and file handling in 'C'.

Mathematics II

CO1: Categorize the vector-valued functions of a real variable and their curves, Gradient vector fields and constructing potentials.
CO2: Analyze the differential ideas of divergence, curl, and the Laplacian along with their

physical interpretations

CO3: Use the applications of Green's theorem in the plane, Gauss divergence theorem and Stake's theorem.

CO4: Formulate the solution set of a system of linear equations

CO5: Solve the characteristic polynomial, eigenvectors, Eigenvalues.

Logical and Digital Circuits

CO1: Convert different type of codes and number systems which are used in digital communication and computer systems.

CO2: Employ the codes and number systems converting circuits and Compare different types of logic families which are the basic unit of different types of logic gates in the domain of economy, performance and efficiency.

CO3: Analyze different types of digital electronic circuit using various mapping and logical tools and know the techniques to prepare the most simplified circuit using various mapping and mathematical methods.

CO4: Design different types of with and without memory element digital electronic circuits for particular operation, within the realm of economic, performance, efficiency, user friendly and environmental constraints.

CO5: Assess the nomenclature and technology in the area of memory devices and apply the memory devices in different types of digital circuits for real world application.

Data Structures through 'C'

CO1: Choose appropriate data structures to represent data items in real world problems

CO2: Illustrate non-linear data structures like linked list

CO3: Organize the data using sorting in various linear data structures and determine time complexity

CO4: Construct data with nonlinear data structure using trees.

CO5: Explain the concept of graphs and b trees

Shell Programming

CO1: Understand Unix Operating system and types of shell

CO2: Apply file related and disk related commands

CO3: Demonstrate the use of VI editor

CO4: Interpret various Unix commands

CO5: Apply loop control structures to solve problems

Operating System

CO1: Explain functions, types and structures of operating system

CO2: Analyze various process management concepts including scheduling and synchronization

CO3: Demonstrate process synchronization and dead locks

CO4: Solve issues related to file system interface

CO5: Choose an appropriate Page replacement algorithm

Electrical Circuits and Machines

CO1: Student will be able to analyze the electrical circuits with help of KCL and KVL techniques.

CO2: Students will be able to explain the operation of DC generator and analyze the Characteristics of DC generator.
CO3: Student will be able to explain the principle of operation of DC motor and analyze their Characteristics. Acquire the skills to analyze the starting and speed control methods of DC motors.
CO4: Judge to develop equivalent circuit and evaluate performance of transformers.
CO5: Ability to identify speed – torque characteristics of induction motor and understand starting methods of induction motor.

Programming in C++

CO1: Describe the procedural and object oriented paradigm with concepts of streams, classes, functions, data and objects.
CO2: Understand dynamic memory management techniques using pointers, constructors, destructors
CO3: Describe the concept of function overloading, operator overloading, virtual functions and polymorphism.
CO4: Classify inheritance with the understanding of early and late binding, usage of exception handling, generic programming.
CO5: Demonstrate file handling in C++.

Discrete Mathematics

CO1: Develop understanding of Logic Sets and Functions
CO2: Evaluate and apply the fundamental concepts in graph theory
CO3: Develop an understanding of how graph and tree concepts are used to solve problems arising in the computer science
CO4: Express the concepts and results of Number Theory
CO5: Identify methods and techniques used in number theory

Probability and Statistics

CO1: Employee the principles of linear regression and correlation, including least square method, predicting a particular value of Y for a given value of X and significance of the correlation coefficient.
CO2: Use discrete and continuous probability distributions, including requirements, mean and variance, and making decisions.
CO3: Able to perform and analyze hypotheses tests of means, proportions and variances using both one-and two-sample data sets.
CO4: Able to apply the appropriate Chi-Squared test for independence and goodness of fit. Can differentiate between the test statistics to be used for dependent and independent samples
CO5: Understand the concepts of quality control, chance and assignable causes of variation, control charts for variables.

Computer Organization

CO1: Demonstrate knowledge of register organization of a basic computer system
CO2: Explain machine language of a basic computer system.

CO3: Appraise in-depth understanding of control unit organization and micro programmed control.
CO4: Apply various algorithms to perform arithmetic operations and propose suitable hardware for them
CO5: Analyze and emphasize various communication media in the basic computer system using design of various memory structures

Database Management Systems

CO1: Represent logical database using Entity Relationship and Enhanced ER model.
CO2: Formulate database using relational algebra and organize relation using normalization
CO3: Design SQL queries and implements PL/SQL.
CO4: Classify the storage and file structure, storage access, indexing and hashing techniques of the database
CO5: Explain the concept of Transactions, recovery system and concurrency control.

Java Programming

CO1: Understand fundamentals of object oriented concepts, classes, objects and methods
CO2: Apply inheritance, packages and exceptional handling techniques
CO3: Demonstrate Threads and applet programming.
CO4: Express event handling and swing components.
CO5: Design interactive programs using swing

Microprocessor Systems and Applications

CO1: To Understand the Architecture of 16-bit Microprocessor 8086 along with different modes of operation
CO2: Apply knowledge and demonstrate programming proficiency using the various addressing modes and data transfer instructions of the 8086t microprocessor
CO3: Analyze different assembly language programs
CO4: Identify the circuitry to the Microprocessor I/O ports in order to interface the processor to external devices
CO5: To combine the different interfacing components of the microprocessor to form a computing Machine.

Object Oriented Systems Development

CO1: Explain basics of OOSD concepts
CO2: Categorize Object oriented methodologies and UML diagrams.
CO3: Choose classification theory and performing case studies.
CO4: Design models based on Object oriented concept.
CO5: Identify software quality, system usability, measuring and satisfaction

Software Testing and Quality

CO1: Express importance of testing in software development process, glass-box testing, black-box testing, and how to report and analyze bugs
CO2: Design different types of test case.
CO3: Organize how to build testing strategy, establishing software testing methodology and software testing techniques.
CO4: Identify the definition of quality, metrics for software quality and inspection techniques

CO5: Explain software configuration management, software reengineering and software restructuring techniques

Software Engineering

CO1: Design software through various process models.
CO2: Analyze Object Oriented concepts and various Models
CO3: Choose different designs and architectures.
CO4: Explain components, golden rules and design evaluation.
CO5: Select testing techniques and determine its quality.

Operation Research

CO1: Identify the various techniques of operations research and to translate a real – world Problem, given in words, into a mathematical formulation.
CO2: Construct the simplex table and to plan the optimum results.
CO3: Use the program for optimizing the cost involved in transportation problems
CO4: Develop and solve transformation models and assignment models
CO5: Design the sequence of jobs and to make up the total process time

Mobile Application and Development

CO1: Compare different mobile application models/architectures and patterns
CO2: Apply a mobile development framework to the development of a mobile application.
CO3: Explain components and structure of a mobile development framework.
CO4: Develop advanced Java programming competency by developing a maintainable and efficient Record Management System.
CO5: Develop Mobile Application using HTTP

Web Technologies

CO1: Illustrate basic html scripts to design web pages
CO2: Explain about cascading style sheets
CO3: Analyze java script programming using operators, expressions, functions
CO4: Classify event handling in java script and introduction to xml
CO5: Develop PHP programs and database connectivity through MySQL

Computer Networks

CO1: Identify basic computer network topologies and protocols and explain Data Communication System components
CO2: Classify different error detecting techniques.
CO3: Construct sub-netting and routing mechanisms.
CO4: Sketch the routing protocols and analyze how to assign the IP addresses for the given network
CO5: Develop network design and implementation

Advanced Java

CO1: Understand and develop concepts of data structures using Java library.
CO2: Develop component-based Java software using JavaBeans and create well-formed XML

document.
CO3: Develop client/server applications using Servlets and JSP.
CO4: Update and retrieve the data from the databases using SQL
CO5: Identify the type of socket used for connection and implement TCP/IP socket programming

E-Commerce
CO1: Explain ecommerce basics and regulatory environment
CO2: Identify EDI and risks associated, maintained and recovery plans.
CO3: Classify security, cryptography and messaging protocols briefly
CO4: Use Firewalls, Intelligent Agents and EPS.
CO5: Apply retailing and advertising techniques and B2B business.

Principles of Information Security
CO1: Explain concepts of confidentiality, availability and integrity (CIA) in context of Information security
CO2: Identify the risk, assess and risk control strategies.
CO3: Demonstrate expertise in configuring host and network level technical security controls to include host firewalls, user access controls, host logging, network filtering, intrusion detection and prevention
CO4: Analyze systems, tools, methods, and techniques for securing digital information within an organization
CO5: Develop encryption and decryption techniques

Cloud Computing
CO1: Understand basic advantages and disadvantages of cloud computing
CO2: Classify design and architecture of cloud computing, types of clouds and services of cloud computing
CO3: Explain cloud computing technology and examples
CO4: Analyze virtualization and virtualization techniques
CO5: Apply of market oriented cloud computing and third party services

Data Mining
CO1: Demonstrate an understanding of the importance of data mining and its related areas.
CO2: Organize and prepare the data needed for data mining using pre preprocessing techniques
CO3: Perform exploratory analysis of the data to be used for mining.
CO4: Implement the appropriate data mining methods like classification, clustering or Frequent Pattern mining on large data sets.
CO5: Define and apply metrics to measure the performance of various data mining algorithms.
CO6: Analyze the problem domain, use the data collected in enterprise apply the appropriate data mining technique, interpret it.

Python Programming
CO1: Demonstrate basic programming techniques.
CO2: Apply concepts of functions, sequences, dictionaries

CO3: Appraise how to implement modules, files, exceptions
CO4: Create object oriented programming
CO5: Explain GUI programming, database and network programming

B.Sc. Computer Systems and Engineering

Programme Specific Outcomes

Students will be able to:

PSO1: Ability to apply the knowledge of computer system and design principles in building the software and hardware components.
PSO2: Ability to apply knowledge of layered network models, protocols, technologies and topologies as well as incorporating security policies for building network and internet based applications.
PSO3: Apply the theoretical foundations of computer science in modeling and developing solutions to the complex and real world problems as well as designing and developing the application software systems along with the database design and management that meet the automation needs of industry and society.
PSO4: Demonstrate proficiency in hardware and software installation and configuration
PSO5: Examine the elements supporting data communications and systems and Show how the various IT components interact to support the Network Communications Management field

Electronic Devices and Circuits

CO1: Define and classify the various electronic components
CO2: Explain the functioning of electronic devices
CO3: Construct and understand the functioning of BJT
CO4: Apply the behaviour of transistor in building amplifier
CO5: Explain the operation of amplifiers and oscillators

Problem Solving and Programming in C

CO1: Explain the basic introduction of computer and programming languages.
CO2: Categorize different data types, operators and data input /output functions in 'C'.
CO3: Develop programs using 'C' control structures, arrays and string concept.
CO4: Sub divides larger problems into smaller ones using 'C' functions.
CO5: Create programs using the concept of structures, union and file handling in 'C'.

Engineering Drawing and Engineering Workshop

CO1: Explain the concept of drawing instruments and represent the lines used in the drawing
CO2: Prepare the different types of construction by selecting the type of construction

CO3: Differentiate drawing from each other, identify the problem, and select the proper portion of the points, lines to solve the problem
CO4: Apply the knowledge of cryptographic checksums and evaluate the performance of different message digest algorithms for verifying the integrity of varying message sizes
CO5: Create the view by looking at the drawing like top, front and side view

Logic and Digital Circuits
CO1: Explain the binary logic and switching circuits
CO2: Solve Boolean algebra and Boolean functions
CO3: Design Boolean functions using universal gates
CO4: Construct the arithmetic circuits and digital comparators
CO5: Construct and analyze the various combinational circuits

C++ and Data Structures
CO1: Differentiate between object-oriented programming and procedure-oriented programming.
CO2: Develop programs using object oriented programming features.
CO3: Organize the data using sorting and various linear data structures and determine the time complexity
CO4: Illustrate non-linear data structures like trees, graph
CO5: Choose appropriate data structures to represent data items in real world problems

PC Hardware and Software Installation
CO1: Identify the basic components of computers
CO2: Differentiate between internal and external connectors
CO3: Analyze different types of processors in market
CO4: Choose RAM and Hard disk drives for a computer
CO5: Develop skill to Assembly and Disassembly a system

IT Hardware and Networking
CO1: Identify Motherboard and its components.
CO2: Analyze the working of various input and output devices
CO3: Explain the working of various storage devices
CO4: Explain Assembling and repairing of Desktop Computer with all its hardware components.
CO5: Identify different types of networking devices

Digital System Design
CO1: Explain the functioning of sequential circuits
CO2: Apply the flip flops in constructing the counters and registers
CO3: Explain the arithmetic and logic micro operations
CO4: Design the arithmetic unit and logic unit
CO5: Construct and analyze the ALU

Java Programming
CO1: Differentiate between object-oriented programming and procedure-oriented programming
CO2: Apply object-oriented programming features for solving a given problem.

CO3: Select an appropriate exception handling depending on application.
CO4: Design file operations using java standard library
CO5: Develop interactive programs using applet and swing

Probability and Statistics

CO1: Determine the relation between any two factors using the concepts of correlation and regression and calculate the mean and variance for the random events.
CO2: Apply the distributions both discrete and continuous for the problems in different fields and learn the importance of normal distribution and its applications in real life.
CO3: Differentiate between different sampling techniques to be used in different situations and draw the inference based on the sample for a population when the sample size is large.
CO4: Compare networking services
CO5: Plan installation of required services in organization

Server Administration

CO1: Choose different editions of operating system
CO2: Organize topologies in active directory
CO3: Compare different services in active directory
CO4: Compare networking services
CO5: Plan installation of required services in organization

Computer Organization

CO1: Demonstrate knowledge of register organization of a basic computer system
CO2: Explain machine language of a basic computer system.
CO3: Appraise in-depth understanding of control unit organization and micro programmed control.
CO4: Apply various algorithms to perform arithmetic operations and propose suitable hardware for them.
CO5: Analyze and emphasize various communication media in the basic computer system using design of various memory structures

Operating Systems

CO1: Explain functions, types and structures of operating system
CO2: Analyze various process management concepts including scheduling and synchronization
CO3: Illustrate the concepts of memory management and I/O system.
CO4: Solve issues related to file system interface.
CO5: Choose an appropriate Page replacement algorithm

Microprocessors and Applications

CO1: Explain the architecture of 8086 based micro computer
CO2: Develop the assembly language programs for 8086 based micro computer
CO3: Develop the interfacing circuits for 8086 based micro computer
CO4: Explain 8086 based microcomputer interrupt mechanism
CO5: Use 8086 based microcomputer to explain serial communication

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Electrical Circuits and Machines

CO1: Analyze the electrical circuits with help of KCL and KVL techniques.
CO2: Explain the operation of DC generator AND DC motor and analyze the Characteristics of DC generator and DC Motor
CO3: Analyze the starting and speed control methods of DC motors.
CO4: Understand to develop equivalent circuit and evaluate performance of transformers
CO5: Understand the operation of various special machines.

Software Testing and Quality

CO1: Express importance of testing in software development process, glass-box testing, black-box testing, and how to report and analyze bugs
CO2: Design different types of test case
CO3: Organize how to build testing strategy, establishing software testing methodology and software testing techniques.
CO4: Identify the definition of quality, metrics for software quality and inspection techniques.
CO5: Explain software configuration management, software reengineering and software restructuring techniques.

Software Engineering

CO1: Design software through various process models
CO2: Analyze Object Oriented concepts and various Models
CO3: Choose different designs and architectures
CO4: Explain components, golden rules and design evaluation
CO5: Select testing techniques and determine its quality

Ethical Hacking

CO1: Explain essential terminology and phases of hacking
CO2: Analyze how to perform reconnaissance in various organizations
CO3: Identify different types of scanning methods
CO4: Explain the maintenance of access gained through hacking
CO5: Design techniques used to avoid the traces of attacks in order to escape from the legal Punishment by a malicious hacker.

Web Security

CO1: Understand Architecture of the World Wide Web and encryption
CO2: Understand SSL and TLS
CO3: Explain digital certificates with PGP
CO4: Explain cookies and Web bugs, privacy protecting techniques
CO5: Explain how to secure your web service, protecting your DNS

Principles of Information Security

CO1: Explain concepts of confidentiality, availability and integrity (CIA) in context of Information security

CO2: Identify the risk, assess and risk control strategies.
CO3: Demonstrate expertise in configuring host and network level technical security controls to include host firewalls, user access controls, host logging, network filtering, intrusion detection and prevention
CO4: Analyze systems, tools, methods, and techniques for securing digital information within an organization
CO5: Develop encryption and decryption techniques.

Database Management Systems
CO1: Represent logical database using Entity Relationship and Enhanced ER model.
CO2: Formulate database using relational algebra and organize relation using normalization.
CO3: Design SQL queries and implements PL/SQL.
CO4: Classify the storage and file structure, storage access, indexing and hashing techniques of the database.
CO5: Explain the concept of Transactions, recovery system and concurrency control.

Advanced Server Administration
CO1: Distinguish and describe the windows server 2012
CO2: Explain directory services and configure DHCP sever
CO3: Identify the prerequisites to install DNS service
CO4: Tell about file services and do install WDS
CO5: Originate the required services

Computer Networks
CO1: Identify basic computer network topologies and protocols and explain Data Communication System components
CO2: Classify different error detecting techniques.
CO3: Construct sub-netting and routing mechanisms.
CO4: Sketch the routing protocols and analyze how to assign the IP addresses for the given network
CO5: Develop network design and implementation

Internet of Things
CO1: Identify the importance of IOT and its applications
CO2: Differentiate between IOT and M2M, SDN and NFV
CO3: Apply logical design using python
CO4: Understand building of IOT devices and Raspberry PI
CO5: Explain the working of WAMP server and AWS

Cryptography and Network Security
CO1: Identify information security goals, classical encryption techniques and acquire fundamental knowledge on the concepts of finite fields and number theory.
CO2: Apply Public Key Cryptographic Technique for securing messages
CO3: Use an appropriate message authentication code.
CO4: Compare the performance of different message digest algorithms for verifying the integrity of varying message sizes

CO5: Compare different IEEE standards and electronic mail security

Linux Administration

CO1: Describe the Installation of Linux and User, Group Administration, ACL
CO2: Explain the configuration NFS, FTP and Send mail server
CO3: Explain the configuration DHCP and SElinux
CO4: Explain the configuration SAMBA and DNS server
CO5: Explain the configuration Apache server, disk quotas

BSc Biotechnology

Programme Specific Outcomes

Students will be able to:

PSO1: Understand the nature and basic concepts of Biotechnology, Genetics, and Chemistry and apply knowledge to identify, analyze and understand concepts to solve problems related to field of Biotechnology and engineering
PSO2: Design to perform experiments and interpret data for investigating complex problems and to develop solution to Biotechnology problems by applying appropriate tools while keeping in mind safety factor for environmental & society
PSO3: Develop oral and written communication skills to justify societal, health, safety and legal issues and understand his responsibilities in biotechnological practices

Biochemistry and Metabolism

CO1: Understand carbohydrates and its complex biochemical pathways within living cells
CO2: Classify types of lipids and explain their role in biological systems
CO3: Explain physical and chemical properties of amino acids and proteins
CO4: Understand the structure of DNA and RNA
CO5: Identify chemical nature of enzymes and Vitamins

Cell Biology & Molecular Genetics

CO1: Understand cytological, biochemical, physiological and genetic aspects of cell.
CO2: Illustrate about the organizational and functional aspects of different types of cell organelles.
CO3: Explain structure and functions of different types of cell organelles.
CO4: Understand the mechanism of DNA Replication, Denaturation & Reassociation kinetics
CO5: Understand fundamentals of DNA damage and repair, including types of mutation and repair mechanisms

Genetic Analysis

CO1: Understand genetics and its fundamentals of origin and history

CO2: Understand different types of mendelian gene interactions
CO3: Illustrate different types sex determination mechanisms in organisms
CO4: Understand non Mendelian gene interactions
CO5: Understand the mechanisms of transfer of genetic information at prokaryotic level

Chemistry–I

CO1: Analyse the energy changes in a given physical or chemical process**.**
CO2: Apply the concept of feasibility of a process.
CO3: Compare the electrical conductivities of various conductors.
CO4: Evaluate cell potential, compare various electrodes.
CO5: Explain various phases in a heterogeneous system, apply the concept to separate various Phases**.**

Immunology

CO1: Understand concepts of nonspecific, specific immunity, organs of immune system.
CO2: Identify the structure, function, and characteristics of immunoglobulins, State the principle of the routine serologic procedures performed in the laboratory.
CO3: Understand antibody diversity MA Production & applications
CO4: Illustrate the relevance of Vaccines& immunity to infection and disease.
CO5: Understand inflammation, allergic reactions &autoimmunity

Biotechnology and Human Welfare

CO1: Explain the Production of industrially important products
CO2: Identify the techniques of genetic engineering for production of transformed plants
CO3: Develop biodegradable biopolymers
CO4: Understand the basic concepts of forensic science
CO5: Apply the concepts of biotechnology in medicine

Microbial Biotechnology

CO1: Categorize major groups of microorganisms
CO2: Choose appropriate methods for control of the growth of microorganisms
CO3: Identify and culture the bacteria
CO4: Explain the concepts of Microbial metabolism
CO5: Apply the principles of Fermentation for production of commercially important products

Chemistry-II

CO1: Analyse the structures of various molecules/ions based on LCAO concept.
CO2: Explain the synthesis and structures of compounds of P-Block elements.
CO3: Explain the synthesis and structures of compounds of P-Block elements.
CO4: Explain the fundamentals of organic molecules.
CO5: Explain the organic reaction mechanisms

Bio-Analytical Techniques

CO1: Explain the operating conditions for the various separation techniques.
CO2: Separate biomolecules using Electrophoretic techniques

CO3: Analyze the working principles of analytical instruments
CO4: Understand the application of radioactivity in the analysis of biomolecules
CO5: Apply the concepts of nanotechnology in medicine

Recombinant DNA Technology
CO1: Explain basic and advanced Concepts of rDNA technology
CO2: Understand the cloning strategies and screening of recombinants.
CO3: Analyze methodology of PCR and sequencing
CO4: Select appropriate vector used for cloning
CO5: Apply rDNA Technology principles for Pharmaceutical applications.

Molecular Biology
CO1: Explain the fine structure analysis of gene
CO2: Illustrate the structure of proteins
CO3: Analyse the mechanisms of central dogma in prokaryotes and eukaryotes
CO4: Explain the molecular mechanisms of gene regulation
CO5: Identify the structure of transposable elements

Chemistry-III
CO1: Explain synthesis and properties of alcohols, phenols and ethers.
CO2: Compare synthesis and properties of aldehydes and ketones.
CO3: Explain synthesis and properties of carboxylic acids, illustrate applications of carbanions.
CO4: Analyse the three dimensional view of a organic molecule, optical isomerism.
CO5: Explain the properties of d- and f-block elements

Plant Biotechnology
CO1: Understand basic Concepts of plant tissue culture techniques
CO2: Identify the techniques of plant tissue culture for crop improvement
CO3: Produce somatic hybrids and artificial seeds
CO4: Explain the large scale culture of plant cells for production of secondary metabolites
CO5: Apply the technology of plant transformation

Human Genetics
CO1: Understand different types of inheritance patterns with example
CO2: Apply the basic knowledge to understand haemoglobin and its variants and disorders
CO3: Understand the biology of cancer
CO4: Apply the basic knowledge to understand the gene therapy for inherited diseases
CO5: Understand on prenatal diagnosis and genetic counselling.

Biostatistics
CO1: Understand definition and importance of biostatistics in different areas
CO2: Illustrate about the graphical representation of data
CO3: Recognize about measures of central tendency
CO4: Understand measures of dispersion.
CO5: Understand the techniques of sampling

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Stem cell Biology

CO1: Classify types of stem cells
CO2: Understand the process of isolation, culturing and identification of Embryonic stem cells
CO3: Identify Adult stem cells
CO4: Apply the principles of genetic engineering to modify Stem cells
CO5: Apply the concept of Tissue Engineering in production of complete organ

Biodiversity

CO1: Understand biodiversity and its importance at global & national levels.
CO2: Understand values of biodiversity and microbial taxonomy and toxins
CO3: Illustrate different types of diversity and relate their ways to conserve wild life
CO4: Understand extinct threatened and endangered species, biodiversity Hotspots & their protection
CO5: Understand importance of biodiversity conservation

Chemistry-IV

CO1: Evaluate the concept of critical phenomenon, real gas.
CO2: Apply the concept of colligative property and determine molar mass of unknown compound**.**
CO3: Analyse the structures of various complexes
CO4: Compare the aromaticity and synthesis of heterocyclic compounds
CO5: Explain synthesis and structures of carbohydrates and amino acids.

Bioprocess & Fermentation Technology

CO1: Explain fermentor design & types of fermentor
CO2: Understand concepts on screening, strain improvement, batch & continuous fermentation
CO3: Analyse & control of different bioprocess parameters
CO4: Understand concepts of downstream process
CO5: Explain production of different fermented products

Medical Biotechnology

CO1: Understand concepts on vaccines, different types of vaccines and their production
CO2: Evaluate different markers and methods used for diagnosing diseases
CO3: Illustrate different therapeutic agents and relate them for treating disease
CO4: Understand advanced techniques & strategies used in treating disease
CO5: Understand Blood clotting factors drug discovery, designing, properties & delivery.

Microbial Physiology

CO1: Identify historical perspectives in Microbiology
CO2: Understands the structure of Prokaryotes
CO3: Identify the Growth phases of bacteria
CO4: Explain the concepts of transport of nutrients
CO5: Analyze the methods of Preservation and Maintenance of Microbial Cultures

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Environmental Biotechnology

CO1: Understand concepts of Food chin, ecological pyramids, global warming and ecosystem
CO2: Understand xenobiotic, effluents, types of recalcitrants & different methods of waste water treatment
CO3: Understand concepts of Biodegradation, Biodegradtive pathways & Bioremediation
CO4: Explain about Bioleaching, renewable, on renewable resources & Biosensors.
CO5: Explain about Biofuel production & role of cellulose in biofuel production.

Evolutionary Biology

CO1: Identify the historical review of evolution
CO2: Understands the concepts of origin of cell
CO3: Classify the types of fossils
CO4: Explain the concepts of natural selection
CO5: Explain the role of extinction in evolution

IPR, Bioethics &Biosafety

CO1: Understand basic issues of biosafety for human health and environment
CO2: Explain necessity of Bioethics and causes of unethical acts
CO3: Identify types of IPR
CO4: Analyze different aspects in carrying out research
CO5: Explain the theories of Entrepreneurship

Animal Biotechnology

CO1: Explain basics concepts of animal cell culture
CO2: Classify the types of animal cell culture media
CO3: Design bioreactors suitable for large scale culture of animal cells
CO4: Apply the principles of genetic engineering to transfect animal cells for industrial use
CO5: Apply the concepts of transgenic animal

Chemistry-V

CO1: Analyse various nuclear processes and applications of radio isotopes.
CO2: Explain fundamental concepts of spectroscopic techniques.
CO3: Compare synthesis and properties of nitrogen compounds
CO4: Evaluate photo processes and compare various organometallic compounds
CO5: Evaluate order and molecularity of a reaction and catalytic processes.

Enzyme Technology

CO1: Understand the principles of enzyme technology
CO2: Explain procedure for production and purification of Crude enzymes
CO3: Demonstrate the methods of immobilization
CO4: Design immobilized enzyme reactors
CO5: Identify the applications of biosensor in healthcare and environment

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Industrial Fermentations

CO1: Develop industrial fermentation process
CO2: Understand the production of microbial metabolites
CO3: Analyze the production processes of secondary metabolites
CO4: Explain the production of industrial enzymes
CO5: Explain the methods of Production of biotechnology products

Fundamentals of Genomics and Proteomics

CO1: Understand the genome and its diversifications
CO2: Apply the basic knowledge to understand genome sequencing methods
CO3: Explain principles and software's and data bases for genome analysis
CO4: Evaluate and analyze methods for secondary structure and natures of proteins
CO5: Characterization of proteins by different advanced techniques

Ecology and Environment Management

CO1: Understand the concepts of ecology and ecosystem.
CO2: Explain basic concepts of hydrosphere, Fresh water Aquatic and Marine ecosystem.
CO3: Understand the concepts of biogeochemical cycles and Energy transfer in ecosystem
CO4: Explain different types of wastes and waste management
CO5: Understand the concepts of Environmental cleanup and role of biotechnology in protection and preservation of environment

Bioinformatics

CO1: Explain INSDC & different types of format.
CO2: Understand different types of data bases available and scoring matrix significance in alignment of sequen**es**
CO3: Explain principles and algorithms of pairwise and multiple alignments, and sequence similarity searching
CO4: Evaluate and analyse methods for secondary structure prediction and phylogenetic tree construction
CO5: Understand on modeling of unknown protein structure by using template and application of bioinformatics in various fields

Dept. of Maths, Statistics & Computer Science

Descriptive Statistics & Probability Distribution-I

CO1: Organize, manage and present data and Analyze statistical data using measures of central tendency
CO2: Analyze the statistical data using dispersion and location.
CO3: Use the basic probability rules, including additive and multiplicative laws, using the terms, independent and mutually exclusive events.
CO4: Develop the probability density function of transformation of random variables.
CO5: Identify probabilities, and derive the marginal and conditional distributions of bivariate random variables.

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Descriptive Statistics & Probability Distributions-II

CO1: Use discrete and continuous probability distributions, including requirements, mean and variance, and making decisions
CO2: Identify the characteristics of different discrete distributions.
CO3: Apply the normal probability distribution including standard normal curve calculations of appropriate areas.
CO4: Choose exponential, beta and Gamma distributions to solve statistical problems.
CO5: Develop different distributions to solve various statistical problems.

Statistical Methods and Inference-I

CO1: Interpret the correlation between two variables.
CO2: Distinguish the principles of linear regression and correlation, including least square method, predicting a particular value of Y for a given value of X and significance of the correlation coefficient.
CO3: Show the association between the attributes.
CO4: Generalize the properties of estimators.
CO5: Differentiate Maximum likely hood estimation and method of moments

Statistical Inference -II

CO1: Develop the distributional results needed for statistical inference.
CO2: Analyze hypotheses tests of means, proportions and variances using both one-and two-sample data sets.
CO3: Explain Chi-Squared test for independence of attributes and goodness of fit.
CO4: Differentiate between the tests statistics to be used for dependent and independent samples.
CO5: Design the test statistic to be used when the nature of the distribution is unknown.

Applied Statistics -I

CO1: Classify the analysis of variance of one-way and two-way classifications.
CO2: Design experiments, carry them out, and analyze the data they yield
CO3: Tell the difference between CSO and NSSO.
CO4: Demonstrate understanding of the concepts of time series and its applications in different areas.
CO5: Differentiate various measures of secular trend and seasonal indices

Applied Statistics – II

CO1: Analyze the concepts of quality control, chance and assignable causes of variation, control charts for variables and attributes.
CO2: Classify tolerance limits, specification limits and process capability limits.
CO3: Select the appropriate index numbers and calculate an indices from given data
CO4: Construct the cost of living index numbers and wholesale price index numbers.
CO5: Develop the knowledge on vital statistics, and calculate fertility rates from given data

Operations Research

CO1: Identify the various techniques of operations research and to translate a real – world problem, given in words, into a mathematical formulation.

CO2: Construct the simplex table and to plan the optimum results.
CO3: Use the program for optimizing the cost involved in transportation problems
CO4: Develop and solve transformation models and assignment models
CO5: Design the sequence of jobs and to make up the total process time

Design of Sampling Surveys

CO1: Analyze the practical issues arising in sampling studies.
CO2: Explain the concepts of simple random sampling with and without replacement.
CO3: Distinguish between simple random sampling and stratified random sampling.
CO4: Compare simple random sampling, stratified random sampling and systematic sampling.
CO5: Choose the equilibrium price and quantity from a table of prices and the related quantity supplied and quantity demanded

Advanced Operations Research

CO1: Analyze various queuing models and obtain the least waiting time.
CO2: construct the network models and determine the start and finish time.
CO3: Design new simple models, like CPM, PERT to improve decision –making and develop critical thinking and objective analysis of decision problems.
CO4: Identify the saddle point for games with mixed strategies.
CO5: Construct the different models involved in game theory.

Abstract Algebra

CO1: Demonstrate important mathematical concepts in abstract algebra such as definition of a group, order of a finite group and order of an element.
CO2: **Analyze** different types of subgroups such as normal subgroups, cyclic subgroups and understand the structure and characteristics of these subgroups
CO3: **Solve** the algebraic problems using appropriate techniques.
CO4: **Analyze** the knowledge and understanding of fundamental concepts including groups, subgroups, normal subgroups, homomorphism and isomorphism.
CO5: Demonstrate knowledge and understanding of rings, fields and their properties.

Differential Calculus And Differential Equations:

CO1: Classify the differential equations with respect to their order and linearity. Solve differential equations of first order using numerical and analytical methods such as Integrating Factors.
CO2: **Analyze** and Solve basic application problems described by first order differential equations. Such as orthogonal trajectories
CO3: **Solve** second order Homogeneous Equations with Constant Coefficients. Obtain exact and numerical solutions using differential equations technology.
CO4: **Construct** the vector-valued functions of a real variable and their curves, Gradient vector fields and constructing potentials.
Co5: Identify the differential ideas of divergence, curl, and the Laplacian along with their physical interpretations.

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Discrete Mathematics

CO1: Develop understanding of Logic Sets and Functions
CO2: **Understand** Boolean algebra and basic properties of Boolean algebra; able to simplify simple Boolean functions by using the basic Boolean properties.
CO3: **Develop** an understanding of how graph and tree concepts are used to solve problems arising in the computer science
CO4: **Evaluate** and apply the fundamental concepts in graph theory
CO5: Apply graph theory based tools in solving practical problems.

Elementary Number Theory

CO1: Express the concepts and results of Number Theory.
CO2: **Demonstrate** knowledge and understanding of topics including, divisibility, prime numbers, congruences, Diophantine equations.
CO3: **Identify** methods and techniques used in number theory.
CO4: **Solve** challenging problems in Number Theory.
CO5: Develop a deeper conceptual understanding of the theoretical basis of number theory and cryptography.

Functions of Complex Variables

CO1: Represent complex numbers algebraically and geometrically, define and analyze limits and continuity for complex functions as well as consequences of continuity.
CO2: **Apply** the concept and consequences of analyticity and the Cauchy-Riemann equations and of results on harmonic and entire functions including the fundamental theorem of algebra.
CO3: **Analyze** sequences and series of analytic functions and types of convergence.
CO4: **Solve** complex contour integrals directly and by the fundamental theorem, apply the Cauchy integral theorem in its various versions, and the Cauchy integral formula.
CO5: Classify singularities and poles, find residues and evaluate complex integrals using the residue theorem. Represent functions as Taylor, power and Laurent series

Laplace Transforms And Fourier Series

CO1: Solve the Laplace transform of standard functions from the definitions.
CO2: **Use** the appropriate shift theorems in finding Laplace and inverse Laplace transforms
CO3: **Combine** the necessary Laplace transform techniques to solve second-order ordinary differential equations.
CO4: **Analyse** the Fourier transform of elementary functions from the definition.
CO5: Develop real and complex forms of the Fourier series for standard periodic waveforms and convert from real-form Fourier series to complex-form and vice-versa.

Linear Algebra

CO1: Construct mathematical arguments that relate to the study of introductory linear algebra.
CO2: **Solve** the characteristic polynomial, eigenvectors, eigenvalues.
CO3: **Analyze** finite and infinite dimensional vector spaces and subspaces over a field and their properties, including the basis structure of vector spaces
CO4: **Use** the definition and properties of linear transformations and matrices of linear

transformations and change of basis, including kernel, range and isomorphism.

CO5: Explain orthogonality on vector spaces and compute inner products and, including Gram-Schmidt orthogonalization

Numerical Analysis

CO1: Categorize the theoretical and practical aspects of the use of numerical methods.

CO2: **Explain** how the common numerical methods and are used to obtain approximate solutions to intractable mathematical problems.

CO3: **Develop** numerical methods for various mathematical operations and tasks, such as interpolation, differentiation, integration, the solution of linear and nonlinear equations, and the solution of differential equations.

CO4: **Analyse** and evaluate the accuracy of common numerical methods.

CO5: Select appropriate numerical methods to apply to various types of problems in engineering and science in consideration of the mathematical operations.

Real Analysis

CO1: Categorize the real line as a complete, ordered field.

CO2: **Use** the definitions of convergence as they apply to sequences, series, and functions.

CO3: **Identify** the continuity, differentiability, and inerrability of functions defined on subsets of the real line.

CO4: **Apply** the Mean Value Theorem and the Fundamental Theorem of Calculus to problems in the context of real analysis.

CO5: Explain the Riemann integrability and the Riemann-Stieltjes integrability of a bounded function and prove a selection of theorems concerning integration.

Solid Geometry

CO1: Use key standards and conventions to communicate graphic ideas and information

CO2: **Demonstrate** knowledge and understanding of plane and solid geometry.

CO3: **Develop** factual knowledge including the mathematical notation and terminology in geometry; points, lines, and angles; planar figures.

CO4: **Evaluate** the surface area of sphere - great circle and volume of sphere, cone.

CO5: Explain the properties of a cylinder. Measure and determine the surface area and Volume of a cylinder.

Fundamentals Of Information Technology

CO1: Understand basic computer terminology and number systems

CO2: Explain about operating systems, and its types

CO3: Apply modern means of communications , types of networks and topologies

CO4: Identify different applications of Information system

CO5: Classify Internet and networks

Problem Solving and Programming through C

CO1: Understand the basic introduction of computer and programming language

CO2: Identify 'C' data types, operators and data input /output functions
CO3: Categorize 'C' control structures, arrays and string concept
CO4: Explain 'C' function, recursion, pointers and dynamic memory allocation
CO5: Express the concept of structures, union and file handling in 'C'.

C++ and Numerical Methods

CO1: Understand C++ programming basics ,operators ,data types
CO2: Apply constructors and destructors
CO3: Explain Inheritance, polymorphism
CO4: Create classes for file streams
CO5: Develop solutions of equations with numerical analysis

Data Base Management Systems

CO1: Describe Entity Relationship and Enhanced ER model.
CO2: Understand the relational model, reduction to relation schema, relational algebra and normalization
CO3: Identify SQL- the standard language of relational databases and PL/SQL programming
CO4: Explain the storage and file structure, storage access, indexing and hashing techniques of the database
CO5: Understand the concept of Transactions, recovery system and concurrency control.

System Analysis and Design

CO1: Understand the system development environment
CO2: Apply the structuring system requirements
CO3: Explain design objectives and transform analysis
CO4: Identify Object oriented system design and development
CO5: Construct UML diagrams

Computer Networks

CO1: Understand and identify basic computer network topologies and protocols and explain Data Communication System components and functions of each layer in OSI model and its protocols.
CO2: Classify different error detecting techniques.
CO3: Create skills of sub-netting and routing mechanisms.
CO4: Identify different internetworking devices
CO5: Compare different OSI upper layers

Java Programming

CO1: Understand java program structure and differentiate between object-oriented programming and procedure- oriented programming.
CO2: Apply Operators and expressions, decision making and classes ,objects and methods concepts

CO3: Explain Use of Arrays ,Strings and Packages
CO4: Solve Multithreading ,exception handling mechanism, with basic applet programming
CO5: Develop interactive programs using applet working with graphics AWT

Operating Systems

CO1: Identify the main components of an OS & their functions
CO2: Analyze various issues in Inter Process Communication (IPC) and the role of OS in IPC.
CO3: Explain Process synchronization, Deadlocks-deadlock characterization, methods for handling deadlocks
CO4: Compare the concepts and implementation Memory management policies and virtual memory
CO5: Understand the working of an OS as a resource manager, file system manager, process manager, memory manager and I/O manager and methods used to implement the different parts of OS

Software Engineering

CO1: Explain engineering through various process models.
CO2: Identify analyze Requirements, Object Oriented and various modeling's.
CO3: Categorize design and architecture
CO4: Classify Components, golden rules and design evaluation
CO5: Understand testing techniques to evaluate quality metrics

B.Sc. Computer Data Science & Data Analytics Engg.

Program Specific Outcomes:

Students will be able to:

PSO1: Apply computer science languages and algorithms, as well as mathematical and statistical models for developing solutions to the real world problems.
PSO2: Understand the fundamentals of Computer Organization, Operating Systems and networking related concepts and apply the knowledge of computer systems in designing and building software solutions.
PSO3: Demonstrate, identify, formulate and analyse diverse big data problems helping in business decision making. Apply supervised and unsupervised machine learning methodologies.
PSO4: Apply appropriate Data Mining and Text Mining techniques for cleaning, processing and transforming the data. Analyze and interpret the data using an ethically responsible approach and derive insights from it.

General English I

Through an exposure to contemporary passages, the students would be able to have a grasp on the language of today, with specific emphasis on the Listening, Speaking, Reading and Writing skills.

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Through the components of a passage, vocabulary and grammar section, speaking component and writing segments, there is a holistic development for language proficiency and fluency.
The students would specifically be able to:

CO1: Distinguish between words which are either spelt or pronounced alike, yet render distinct meanings; imparting a sound clarity on everyday usage and miscommunications embedded in language

CO2: Develop the art of parallel listening and writing; the art of swift, crisp and organized writing through note making

CO3: Improve diction and gain understanding on the tense component, a pivotal constituent for language structuring.

CO4: Transfer the data in pictorial or graphical representations to a textual format, in order to restate information in different forms in their present academic or future professional lives.

CO5: Identify with economical word constructions, paying specific attention to vocabulary building in English

CO6: Construct their writing skills in writing formal letters and to design their curriculum vitae efficiently to venture into future job endeavors

CO7: Interpret subject-verb agreement, the basic part involved in sentence constructing to improve their linguistic skills

CO8: Gain knowledge to plan technical and project reports for, writing responses to instructions for a person in authority, or for presenting a proposal to the clients.

CO9: Extend their language efficiency through the grammar component of commonly confused and misspelt words, and errors related to vocabulary and different aspects of grammar, which would be seemingly helpful for language delivery

CO10: Cite varied sources of references, and become skilled at constructing a bibliography, an important piece of academic writing to acknowledge the author's debt to others, for facts and ideas a book or paper is built on

Fundamentals Of Information Technology

CO1: Understand basic computer terminology and number systems.

CO2: Learn about operating systems, and its types.

CO3: Learn about the applications of Information technology

CO4: Importance of system development and the phases of SDLC

CO5: Use of modern means of communications, types of networks and topologies

Differential Equations and Number Theory

CO1: Classify the differential equations with respect to their order and linearity. Solve differential equations of first order using numerical and analytical methods such as Integrating Factors.

CO2: Analyze and Solve basic application problems described by first order differential equations. such as orthogonal trajectories.

CO3: **Solve** second order Homogeneous Equations with Constant Coefficients. Obtain exact and numerical solutions using differential equations technology.

CO4: Express the concepts and results of Number Theory.

CO5: Demonstrate knowledge and understanding of topics including, divisibility, prime numbers, congruences.

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Descriptive Statistics And Probability Distributions – I

CO1: Organize, manage and present data and Analyze statistical data using measures of central tendency
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Problem Solving and Programming through C

CO1: Understand the basic introduction of computer and programming language.
CO2: Identify 'C' data types, operators and data input /output functions.
CO3: Categorize 'C' control structures, arrays and string concept.
CO4: Explain 'C' function, recursion, pointers and dynamic memory allocation.
CO5: Express the concept of structures, union and file handling in 'C'.

General English-II

To enhance the learner's communication skills by giving adequate exposure to increase their proficiency in reading, writing, listening and speaking skills and the related sub skills.
Students will be able to:
CO1: Have a sound understanding on the formation of words and in describing the functional grammatical component in the sentence.
CO2: Apply their writing skills for brief write ups and speaking skills for responding to opinion based questions.
CO3: Identify the appropriate Modal Auxiliary verbs for the apt meaning and usage
CO4: Learn the art of constructing an exhaustive report to suit varied circumstances and instances
CO5: Create an outlook into Indian Literature; alongside develop and chisel their communication skills
CO6: Demonstrate their descriptive skills for effective expression in writing
CO7: Recognize the moral element which underlies in the short story; an exposure to informal language
CO8: Discover and to enhance recall and comprehension of the content material
CO9: Develop listening and speaking skills through effective sentence constructions and efficient delivery
CO10: Paraphrasing ideas and thoughts in a coherent, neat and organized manner for sound writing propagandas

Indian Heritage and Culture

CO1: This unit makes the student to *understand* better about the origin of ancient Indian culture the contributions of great rulers from both north and south India for Indian culture in ancient days
CO2: Students will Analyse how Persian culture entered into India and it influence the Fine Arts of Indian society like Classical Music, Dance and Architecture.

CO3: Student is able to assess how the Indian orthodox society turn into modern and western society in the 19th century. It also edifies the students with spiritual doctrines of various Religions.
CO4: Students will *evaluate* various challenges face by the youth and the evils effects of terrorism on society
CO5: The topics in the unit Create belongingness among the students by bringing awareness of the rights and duties to make the world a better place and it throw light on gender sensitization issues of women, Children and LGBT

Abstract Algebra

CO1: Demonstrate important mathematical concepts in abstract algebra such as definition of a group, order of a finite group and order of an element.
CO2: Analyze different types of subgroups such as normal subgroups, cyclic subgroups and understand the structure and characteristics of these subgroups
CO3: Solve the algebraic problems using appropriate techniques.
CO4: Analyze the knowledge and understanding of fundamental concepts including groups, subgroups, normal subgroups, homomorphism and isomorphism.
CO5: Demonstrate knowledge and understanding of rings, fields and their properties.

Numerical Analysis

CO1: Categorize the theoretical and practical aspects of the use of numerical methods.
CO2: Explain how the common numerical methods and are used to obtain approximate solutions to intractable mathematical problems.
CO3: Develop numerical methods for various mathematical operations and tasks, such as interpolation, differentiation, integration, the solution of linear and nonlinear equations, and the solution of differential equations.
CO4: Analyse and evaluate the accuracy of common numerical methods.
CO5: Select appropriate numerical methods to apply to various types of problems in engineering and science in consideration of the mathematical operations.

Descriptive Statistics and Probability Distributions – II

CO1: Use discrete and continuous probability distributions, including requirements, mean and variance, and making decisions
CO2: Identify the characteristics of different discrete distributions.
CO3: Apply the normal probability distribution including standard normal curve calculations of appropriate areas.
CO4: Choose exponential, beta and Gamma distributions to solve statistical problems.
CO5: Develop different distributions to solve various statistical problems.

Data Structures through C

CO1: Choose appropriate data structures to represent data items in real world problems
CO2: Illustrate non-linear data structures like linked list
CO3: Organize the data using sorting in various linear data structures and determine time complexity
CO4: Construct data with nonlinear data structure using trees.
CO5: Explain the concept of graphs and b trees

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Python Programming

CO1: Implement the structure and components of a Python program.
CO2: Express how to write loops and decision statements in Python.
CO3: Interpret how to write functions and pass arguments in Python.
CO4: Explain build and package Python modules for reusability.
CO5: Create files and handle exceptions

Python Programming

CO1: Implement the structure and components of a Python program.
CO2: Choose appropriate data structures.
CO3: Interpret how to write functions and pass arguments in Python.
CO4: Categorize different exception.
CO5: Understand basic GUI programming

Computer Organization

CO1: Understand basic Circuit designing and number systems
CO2: Explain about how data transferred from one register to another register
CO3: Construct designing of control unit and Central Processing Unit
CO4: Classify different types of computer arithmetic operations
CO5: Categorize all peripheral devices and memory

Statistical Methods and Inference – I

CO1: Interpret the correlation between two variables.
CO2: Distinguish the principles of linear regression and correlation, including least square method, predicting a particular value of Y for a given value of X and significance of the correlation coefficient.
CO3: Show the association between the attributes.
CO4: Generalize the properties of estimators.
CO5: Differentiate Maximum likely hood estimation and method of moments

Database Management Systems

CO1: To describe Entity Relationship and Enhanced ER model.
CO2: To understand the relational model, reduction to relation schema, relational algebra and normalization.
CO3: To use SQL- the standard language of relational databases and PL/SQL programming.
CO4: To understand the storage and file structure, storage access, indexing and hashing techniques of the database.
CO5: To understand the concept of Transactions, recovery system and concurrency control.

Accounting and Financial Management

CO1: To describe the need and importance of accounting and infer the various principles of accounting

CO2: To Explain about branches of accounting
CO3: To analyze the financial position of an organization
CO4: To interpret the sources of finance.
CO5: To create budgets for key factors of organization.

R Programming
CO1: Understand basic concept of R.
CO2: Demonstrate programming concepts and data structures in R.
CO3: Analyze a large problem by sub dividing it into smaller components using functions
CO4: Choose an appropriate graphic for analysis and analyze data using summary statistics.
CO5: Choose the type of regression based on data set.

Data Mining and Data Warehousing
CO1: To understand the concepts of data mining and its importance
CO2: Analyze different classification and clustering methods using algorithms
CO3: Explain the data flow and the concepts of warehousing
CO4: Express how to build data marts and to learn about dimensional modeling.
CO5: Identify concepts of Extraction, Transformation and loading.

Operating Systems
CO1: Identify the main components of an OS & their functions
CO2: Analyze various issues in Inter Process Communication (IPC) and the role of OS in IPC.
CO3: Explain Process synchronization, Deadlocks-deadlock characterization, methods for handling deadlocks.
CO4: Compare the concepts and implementation Memory management policies and virtual memory.
CO5: Understand the working of an OS as a resource manager, file system manager, process manager, memory manager and I/O manager and methods used to implement the different parts of OS

Statistical Inference –II
CO1: Develop the distributional results needed for statistical inference.
CO2: Analyze hypotheses tests of means, proportions and variances using both one-and two-sample data sets.
CO3: Explain Chi-Squared test for independence of attributes and goodness of fit.
CO4: Differentiate between the tests statistics to be used for dependent and independent samples.
CO5: Design the test statistic to be used when the nature of the distribution is unknown.

Java Programming
CO1: Write java programs and differentiate between object-oriented programming and procedure-oriented programming.
CO2: Apply object-oriented programming features for solving a given problem.
CO3: Incorporate exception handling mechanism.
CO4: Implement Use java standard API library to handle file operations.
CO5: Develop interactive programs using applet and swing

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Operations Research

CO1: Identify the various techniques of operations research and to translate a real – world problem, given in words, into a mathematical formulation.
CO2: Construct the simplex table and to plan the optimum results.
CO3: Use the program for optimizing the cost involved in transportation problems
CO4: Develop and solve transformation models and assignment models
CO5: Design the sequence of jobs and to make up the total process time

Data Visualization Tools

CO1: Understand the way of representing visual data and its applications.
CO2: Demonstrate data visualization using combination of various charts.
CO3: Apply visualizing techniques using matplotlib package.
CO4: Design effective graphical analysis in R
CO5: Construct data visualizations with Tableau to create customized dashboards and reports.

Software Testing & Quality

CO1: Analyze importance of testing in software development process, apply glass-box testing, black- box testing, and how to report and analyze bugs
CO2: Identify problem tracking system, different types of testing and test case design.
CO3: To understand how to build testing strategy, establishing software testing methodology and software testing techniques.
CO4: Explain the definition of quality, metrics for software quality and inspection techniques.
CO5: Classify software configuration management, software reengineering and software restructuring techniques.

Software Engineering

CO1: Explain engineering through various process models.
CO2: Identify analyze Requirements, Object Oriented and various modeling's.
CO3: Categorize design and architecture
CO4: Classify Components, golden rules and design evaluation.
CO5: To understand testing techniques to evaluate quality metrics

Text Mining

CO1: Demonstrate an understanding of the importance of Text mining and its related areas
CO2: Compare the appropriate data mining methods like classification and clustering.
CO3: Apply the concepts of information extraction and retrieval.
CO4: Identify how to apply metrics to measure the performance of various mining algorithms.
CO5: Analyse the data visualization techniques, use the data collected in enterprise apply the interpret it.

Data Analytics and Decision Making

CO1: Understand the role of data in evidence based decision making
CO2: Examine the systems by which data is or can be made available
CO3: Possess an understanding of measurement issues and processes for understanding

relationships based on statistical theory
CO4: Apply modern quantitative tools to data analysis in a business context
CO5: Analyse and interpret data to provide meaningful information to assist in decision making

Machine Learning Techniques
CO1: Have a good understanding of the fundamental issues and challenges of machine learning: data, model selection, model complexity, etc.
CO2: Classify the learning algorithms and apply to the given data set.
CO3: Identify the underlying mathematical relationships within and across Machine Learning algorithms and the paradigms of supervised and un-supervised learning.
CO4: Evaluate and interpret the results of the algorithms.
CO5: Design and implement machine learning solutions to classification, regression, and clustering problems

Computer Networks
CO1: Understand and identify basic computer network topologies and protocols and explain Data Communication System components.
CO2: Describe the functions of each layer in OSI model and its protocols.
CO3: Classify different error detecting techniques.
CO4: Build skills of sub-netting and routing mechanisms.
CO5: Classify the routing protocols and analyze how to assign the IP addresses for the given network

Data Security
CO1: Identify some of the factors driving the need for data security
CO2: Examine and classify particular examples of attacks
CO3: Classify the terms vulnerability, threat and attack
CO4: Analyze physical points of vulnerability in simple networks
CO5: Compare and contrast symmetric and asymmetric encryption systems and their vulnerability to attack, and explain the characteristics of hybrid systems.

Cloud Computing
CO1: Understand distributed systems for cloud computing
CO2: Identify cloud servers, types and components
CO3: Analyse cloud architectural information in the present generation of market
CO4: Compare types of clients in the cloud and virtualization
CO5: Examine virtual machines the market and usage

Marketing Data Analytics
CO1: Understand market research methods
CO2: Analyze consumer behaviour and marketing strategy
CO3: Identify market basket analysis

CO4: Examine survival analysis
CO5: Classify customer segmentation

Social Media Analytics
CO1: Identify various platforms in social media
CO2: Understand processing of social media
CO3: Compare differences between twitter and other social media networks
CO4: Analyze Facebook information and write business cases
CO5: Differentiate social media networks Instagram (i.e., usage of instagram and data processing techniques also they will get idea)

Big Data Analytics
CO1: Explain the motivation for big data systems and identify the main sources of Big Data in the real world.
CO2: Develop technical skills in predicative and prescriptive modeling to support business decision-making.
CO3: Implement several Data Intensive tasks using the Map Reduce Paradigm.
CO4: Understand Hadoop ecosystem such as YARN and HIVE-QL for structured databases.
CO5: Demonstrate an ability map-reduce programming using PIG and NoSQL databases for storing purpose and process for Big Data Analytics

B.Sc. Electronics Technology

Program Specific Outcomes:

Students will be able to:

PSO1: Students will be able to understand the concepts and apply fundamentals of electronics in various domains of analog and digital systems.
PSO2: Design and analyze various functional elements of different modes of communications systems
PSO3: Implement and demonstrate variety of automation systems by controlling, processing different signals according to the required specifications.
PSO4: Compete with the people who are using electronic hardware and software IT tools for the design and analysis of complex electronic systems in furtherance to research activities.
PSO5: Excellent adaptability to changing work environment, good inter personal skills as a leader in a team with good skills to communicate in both oral and written forms.

General English-I

Through an exposure to contemporary passages, the students would be able to have a grasp on the language of today, with specific emphasis on the Listening, Speaking, Reading and Writing

skills. Through the components of a passage, vocabulary and grammar section, speaking component and writing segments, there is a holistic development for language proficiency and fluency.

The students would specifically be able to:

CO1:

1. Distinguish between words which are either spelt or pronounced alike, yet render distinct meanings; imparting a sound clarity on everyday usage and miscommunications embedded in language
2. Develop the art of parallel listening and writing; the art of swift, crisp and organized writing through note making

CO2:

1. Improve diction and gain understanding on the tense component, a pivotal constituent for language structuring.
2. Transfer the data in pictorial or graphical representations to a textual format, in order to restate information in different forms in their present academic or future professional lives.

CO3:

1. Identify with economical word constructions, paying specific attention to vocabulary building in English
2. Enhance their writing skills in writing formal letters and to structure their curriculum vitae efficiently to venture into future job endeavors

CO4:

1. Learn subject-verb agreement, the basic part involved in sentence constructing to improve their linguistic skills
2. Gain knowledge in framing technical and project reports for writing responses to instructions for a person in authority, or for presenting a proposal to the clients.

CO5:

1. Polish their language efficiency through the grammar component of commonly confused and misspelt words, and errors related to vocabulary and different aspects of grammar, which would be seemingly helpful for language delivery
2. Cite varied sources of references, and become skilled at constructing a bibliography , an important piece of academic writing to acknowledge the author's debt to others, for facts and ideas a book or paper is built on.

Programming in C & Data Structures

CO1: Describe the features of Procedure Oriented Programming
CO2: Solve real life problems using Arrays and Functions
CO3: Differentiate between call by value and call by reference
CO4: Understand the concepts of Pointers and Dynamic Memory Allocation
CO5: Analyze data structures like stacks, linked lists

Mathematics Foundation for Electronics

CO1: Categorize the differential equations with respect to their order and linearity. Solve differential equations of first order using numerical and analytical methods such as Integrating Factors.
CO2: Analyze and Solve basic application problems described by first order differential equations. Such as circuits, orthogonal trajectories.
CO3: Solve second order Homogeneous Equations with Constant Coefficients. Obtain exact and numerical solutions using differential equations technology.
CO4: Formulate the solution set of a system of linear equations. .
CO5: Solve the characteristic polynomial, eigenvectors, eigenvalues.

Mechanics (Physics-I)

CO1: Explain basic laws of motion and laws of mechanics
CO2: Apply laws of motion on rigid bodies to study their fundamental laws
CO3: Identify the importance of basic laws to study the motion of planets
CO4: Able to judge relative motion of systems
CO5: Analyze waves and their propagation mathematically

Basic Circuit theory and Network Analysis

CO1: Apply technique electrical networks in presence of active and passive elements.
CO2: Classify Electrical networks with network topology concepts.
CO3: Analyze magnetic circuit with various dot conventions. Electrical networks by using principles of network theorems
CO4: Analyze R, L, C network with sinusoidal excitation
CO5: Use R, L, network with variation of any one of the parameters i.e R, L, C. and f

General English-II

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To enhance the learner's communication skills by giving adequate exposure to increase their proficiency in reading, writing, listening and speaking skills and the related sub skills.

Students will be able to:

CO1:

1. Have a sound understanding on the formation of words and on the functional grammatical component in the sentence.

2. Enhance their writing skills for brief write ups and speaking skills for responding to opinion based questions.

CO2:

1. Identify the appropriate Modal Auxiliary verbs for the apt meaning and usage
2. Learn the art of exhaustive report writing to suit varied circumstances and instances

CO3:

1. Have a glimpse into Indian Literature; alongside develop and chisel their communication skills
2. Enhance their descriptive skills for effective expression in writing

CO4:

1. Grasp the moral element which underlies in the short story ; an exposure to informal language
2. Discover and to enhance recall and comprehension of the content material

CO5:

1. Develop listening and speaking skills through effective sentence constructions and efficient delivery
2. Paraphrasing ideas and thoughts in a coherent, neat and organized manner for sound writing propagandas

Indian Heritage & Culture

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CO1:

1. This unit makes the student to understand better about the origin of ancient Indian culture
2. Student will come to know the contributions of great rulers from both north and south India for Indian culture in ancient days

CO2:

1. Students will understand how Persian culture entered into India and how it influenced.
2. It also helps the student to know the Fine Arts of India like Classical Music, Dance etc.

CO3:

1. This unit explains how Indian orthodox society turn into modern and into western lifestyle in19th century.
2. It gives a Glimpse of Indian freedom movement and also edifies the student with spiritual doctrines of the country by explaining various Religions.

CO4:

1. By studying this unit student will learn the rights of children and various challenges facing by the youth of Indian society.
2. It helps them to understand the evils of terrorism and its impact on society

CO5:

1. These topics in the unit help the students to know various gender issues like women rights and about LGBT issues.
2. Student will know his rights and duties to make the world a better place to live

Object Oriented Programming with C++

CO1: Memorize the concepts of Object oriented programming
CO2: Apply Control structures to write programs
CO3: Differentiate the types of constrictors
CO4: Demonstrate polymorphisms and types of Inheritance
CO5: Analyze the concept of Template and files.

Vector Calculus, 3d-gemetry, Fourier series

CO1: Categorize the vector-valued functions of a real variable and their curves, Gradient vector fields and constructing potentials.
CO2: Analyze the differential ideas of divergence, curl, and the Laplacian along with their physical interpretations.
CO3: Use the applications of Green's theorem in the plane, Gauss divergence theorem and

Stake's theorem.

CO4: Solve the Laplace transform of standard functions from the definitions.

CO5: Combine the necessary Laplace transform techniques to solve second-order ordinary differential equations.

Waves and Oscillations

CO1: Explain concepts of wave and its characteristics

CO2: Differentiate types of waves and oscillations

CO3: Apply the concept of wave propagation to the strings

CO4: Apply the concept of wave propagation to the bars.

CO5: Design a new application based on ultrasonic sound.

Electronic Devices and Circuits

CO1: Study the crystal structure and analyze the behaviour of semiconductor material

CO2: Explain the various voltages across and current flow through a pn junction with varying doping concentrations

CO3: Explain the various voltages across and current flow through any Trasnsistor in variovs configurations junction with varying doping concentrations which help to realize an amplifier circuit.

CO4: Analyze various factors influencing a transistor.

CO5: Understand the type of semiconductor material used in power and opto electronic devices and analyze the current flow through them.

Repair and Maintenance of Home Appliances

CO1: Identify various electronic components.

CO2: Construct a dc power supply.

CO3: Explain the characteristics of transistors.

CO4: Choose an operating system for the required application.

CO5: Demonstrate the working of electrical appliance.

Functions of a Complex Variable

CO1: Represent complex numbers algebraically and geometrically and define.

CO2: Apply limits and continuity for complex functions as well as consequences of continuity.

CO3: Analyze the concept and consequences of analyticity and the Cauchy-Riemann equations.

CO4: Solve complex contour integrals directly and by the fundamental theorem, apply the Cauchy integral theorem in its various versions, and the Cauchy integral formula.

CO5: Classify singularities and poles, find residues and evaluate complex integrals using the residue theorem. Represent functions as Taylor, power and Laurent series

Electromagnetic Theory

CO1: Explain fundamental laws governing EM fields and evaluate the physical quantities of EM fields (field intensity, flux density, etc.) in different media using the fundamental laws.

CO2: Design storage devices using dielectrics, capacitors, inductors using laws of EM fields
CO3: Apply principles of magneto statistics to the solutions of problems relating to the magnetic field and magnetic potential and to describe magnetic field around a moving charge.
CO4: Apply laws of EMI on devices like betatron , moving ballistic galvanometer ,transformers, etc.....
CO5: Analyze Electromagnetic wave propagation and importance of Maxwell's equations.

Logic & Digital Circuits

CO1: Convert different type of codes and number systems which are used in digital communication and computer systems.
CO2: Employ the codes and number systems converting circuits and Compare different types of logic families which are the basic unit of different types of logic gates in the domain of economy, performance and efficiency.
CO3: Analyze different types of digital electronic circuit using various mapping and logical tools and know the techniques to prepare the most simplified circuit using various mapping and mathematical methods.
CO4: Design different types of with and without memory element digital electronic circuits for particular operation, within the realm of economic, performance, efficiency, user friendly and environmental constraints.
CO5: Assess the nomenclature and technology in the area of memory devices and apply the memory devices in different types of digital circuits for real world application.

Electronic Wave Shaping Circuits

CO1: Design and construct a DC power supply
CO2: Analyze the function of wave shaping circuits and differentiate between linear and non linear wave shaping.
CO3: Design and construct amplifier and oscillator circuits and differentiate between them
CO4: Classify different types of power amplifiers
CO5: Design and construct different types of timing circuits

Group Theory & Differential Calculus

CO1: Apply concepts in abstract algebra such as definition of a group, order of a finite group and order of an element.
CO2: Categorize types of subgroups such as normal subgroups, cyclic subgroups and understand the structure and characteristics of these subgroups.
CO3: Understand the definitions of Homomorphism –Cayley's theorem.
CO4: Analyze the consequences of Rolle's Theorem and the Mean Value theorem for differentiable functions.
CO5: Apply divergence test to determine divergence of an infinite series.

Modern Physics

CO1: Explain different types of atomic spectrums
CO2: Classify the different molecular spectrums
CO3: Analyze nucleus and compare with atom

CO4: Survey on microscopic particles
CO5: Develop new types of materials for different applications

Electronic Communication Techniques
CO1: To recognize the basic components of a communication system
CO2: To illustrate the basic modulation systems and classification
CO3: To sketch the modulated wave forms
CO4: To classify analog and digital communication system
CO5: To differentiate new digital, mobile techniques

Linear Integrated circuits
CO1: To understand the basic differential amplifier, the basic building block of operational amplifier and its practical details.
CO2: To explain the general linear application of an operational amplifier.
CO3: To describe the wave generation wave shaping circuits of op-amp.
CO4: To identify the non-linear applications.
CO5: To create the specialized IC applications.

Java
CO1: Express java program structure and differentiate between object-oriented programming and procedure- oriented programming.
CO2: Apply Operators and expressions, decision making branching and looping
CO3: Explain Use of Classes, objects, methods, Arrays and its types.
CO4: Solve Multithreading, exception handling mechanisms
CO5: Develop applet programs to create interactive web pages

Computer Organization
CO1: To understand basic computer operations
CO2: To explain basic computer organizational design
CO3: To classify the different blocks of the basic computer
CO4: To compare data transfer with different addressing modes
CO5: To analyze the memory organization

Numerical Analysis
CO1: Identify the theoretical and practical aspects of the use of numerical methods.
CO2: Demonstrate understanding of common numerical methods and how they are used to obtain approximate solutions to otherwise intractable mathematical problems.
CO3: Apply numerical methods to obtain approximate solutions to mathematical problems.
CO4: Develop numerical methods for various mathematical operations and tasks, such as interpolation, differentiation, integration, the solution of linear and nonlinear equations, and the solution of differential equations.
CO5: Analyze and evaluate the numerical solution of ordinary differential equations.

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Microprocessor &Microcontroller

CO1: Explain the microprocessor's internal architecture and its operation within the area of manufacturing and performance.
CO2: Apply knowledge and demonstrate programming proficiency using the various addressing modes and instructions of the target microprocessor.
CO3: To analyze the need of various interfacing devices like 8255,8259 along with interrupt types and stack
CO4: To explain the co-processor to perform mathematical operations, USART,DMA and timers functional block diagrams
CO5: To explain the difference between processor and controller with architecture of 8051.

Microwaves &Devices

CO1: To define the radio wave spectrum and microwave applications
CO2: To explain the use of micro wave components and their applications
CO3: To survey the structural and operational characteristics of microwaves along with their applications
CO4: To compare the basic microwave devices and circuits
CO5: To combine the microwave tubes and devices

Transmission Lines &Wave guides

CO1: Discuss the propagation of signals.
CO2: Analyze signals at radio frequencies
CO3: Connect different wave guides and impedance matching devices
CO4: Explain radio propagation in guided systems.
CO5: Utilize cavity resonator.

Optical Fiber Communication

CO1: Classify different optical fibers and wave propagation through them.
CO2: Characterize the luminance by and current through the devices.
CO3: Characterize the illumination on and current through the devices.
CO4: Combine two optical fibers.
CO5: Apply their acquired skill set in various applications on civil and military.

Electronic Instrumentation

CO1: Understand the different types of instruments
CO2: Analyze different types of digital voltmeter
CO3: Demonstrate the CRO in different conditions
CO4: Explain different types of Transducers.
CO5: Use Data Acquisition and conversion

Management of Modern Organization

CO1: To identify and interpret the various principles and importance of management

CO2: To explain and demonstrate the uses of planning and organizing
CO3: To classify and combine the various techniques of control and coordination
CO4: To point out and develop the essence of motivation and direction of the students
CO5: To interrelate and understand the essence of leadership and importance of communication

Thermodynamics & Optics

CO1: Explain basic concepts of thermodynamics.
CO2: Design a thermodynamic system.
CO3: Survey on microscopic particles.
CO4: Analyze wave nature of light and its characteristics.
CO5: Analyze wave nature of light and its characteristics.

Linear Control Systems

CO1: Able to analysis of Transfer function, block diagram reduction techniques and SFG.
CO2: Analyze the different motors like servo motors.
CO3: Understands the time response of different systems.
CO4: Analyze the stability of the systems.
CO5: Design different functions polar and bode plots.

Micro Controller & Embedded systems

CO1: Apply knowledge and demonstrate programming proficiency and instructions of microcontroller
CO2: To interface various devices –input and output to interact with microcontroller and study various operating systems
CO3: Explain block diagram of 80286, Operation of various types of DMA to have efficient system design
CO4: To analyze how time management can be done to accomplish a work so that scheduling can be done for various external interrupting devices
CO5: To analyze how compilation process is done, distinguish between native, cross processor along with processor and IO dependent.

IT Hardware and Networking

CO1: Identify PC Component and various Expansion Cards
CO2: Distinguish keyboard types, mouse and printers
CO3: Compare different HDD, DVD and SMPS
CO4: Show assembly and disassembly of PC
CO5: Demonstrate different networking devices

Electrical Machines

CO1: Student will be able to analyze the electrical circuits with help of KCL and KVL techniques.
CO2: Students will be able to explain the operation of DC generator and analyze the

Characteristics of DC generator.

CO3: Student will be able to explain the principle of operation of DC motor and analyze their Characteristics. Acquire the skills to analyze the starting and speed control methods of DC motors.

CO4: Judge to develop equivalent circuit and evaluate performance of transformers.

CO5: Ability to identify speed – torque characteristics of induction motor and understand starting methods of induction motor.

Industrial Electronics

CO1: Understand the different power electronics components.
CO2: Analyze the different heating methods.
CO3: Design of different inverters.
CO4: Analyze the different rectifiers.
CO5: Able to understand the different switches.

Robotics

CO1: Apply the programming concepts of micro controllers
CO2: Categorize various types of motors and distinguish between.
CO3: Select an appropriate sensor to design their circuit
CO4: Design their project
CO5: To develop a communication link between two or more electronic modules or systems.

B.Sc. Food Technology and Management

Program Specific Outcomes:

Students will be able to:

PSO1: Understand the concept of Food Technology and Management
PSO2: Analyse various food safety laws , regulations and Acts
PSO3: Apply the knowledge of processing and preservation techniques in increasing the shelf life of food products
PSO4: Think critically about marketing and management strategies related to food.

Food Chemistry

CO1: Evaluate the importance and role of carbohydrates in food.
CO2: Analyze the functional properties of proteins in food.
CO3: Explain the oxidative reactions of lipids in food
CO4: Classify the enzymes of importance in food
CO5: Evaluate the role of water in food

Microbiology Of Food And Water

CO1: Identify different microorganisms associated with food
CO2: Evaluate the microbial estimation in food.

CO3: Analyze microorganisms associated with various food groups
CO4: Evaluate the various food preservation techniques.
CO5: Explain various food borne illnesses.

Food Safety, Quality Control and Sensory Evaluation
CO1: Create Knowledge on various food hazards.
CO2: Evaluate the importance of food laws and acts.
CO3: Analyze quality aspects of food commodities.
CO4: understand the subjective and objective testes of sensory parameters.
CO5: Evaluate the role of sanitation and hygiene in food industry.

Food microbiology and food safety
CO1: Identify different microorganisms associated with food
CO2: Understand the factors affecting growth of microorganisms.
CO3: Evaluate the microbial estimation in food.
CO4: Create Knowledge on various food hazards.
CO5: Analyze the recent concerns in food safety and new and emerging pathogens.

Food Biochemistry
CO1: Evaluate various analytical methods
CO2: Classify carbohydrates and different metabolic pathways
CO3: Classify lipids and fatty acids and synthesis of fatty acids
CO4: Distinguish transamination and deamination
CO5: Demonstrate protein biosynthesis

Technology of Fermented Foods and Beverages
CO1: Prepare various kinds of pickles
CO2: Prepare different oriental and traditional fermented foods
CO3: Differentiate natural & artificial sugars ,colours ,flavours and preservatives
CO4: Classify fruit based, carbonated, synthetic beverages
CO5: Explain process of various alcoholic beverages

Technology of Fruits and Vegetables
CO1: Explain processing methods and role of F&V in human diet
CO2: Tell about Post harvest handling methods and treatments of F&V
CO3: Explain process of canning ,machinery and storage in foods
CO4: Prepare various products of F&V
CO5: Classify fruit beverages and methods of preservation

Food and Human nutrition
CO1: Describe the general classification, examples, deficiencies, functions of nutrients
CO2: Create various diet plans for various age groups
CO3: Analyze the assessment of nutritional status

CO4: Compare different international agencies in overcoming malnutrition

Food Processing and Preservation

CO1: Create knowledge on various food processing operations
CO2: Explain about the technologies of colloids in foods
CO3: Create knowledge on water disposal and sanitation
CO4: Apply the minimal processing and hurdle technology
CO5: Point out the different food additives and contaminants in foods

Technology of Food Preservation

CO1: Classify different microorganisms based on various factors
CO2: Categorize the changes occurring during low temperature preservation
CO3: Categorize the changes occurring during high temperature preservation
CO4: Explain the various factors affecting preservation by drying method
CO5: Apply various methods of food preservation using recent technologies

Food Processing and Quality Control (Geid)

CO1: Create knowledge on various principle in food preservation
CO2: Explain about the various processing methods of fruits and vegetables
CO3: Explain about the various processing steps involved in chocolate manufacturing
CO4: Prepare the various dairy products
CO5: Analyze the different foods by using food laws and regulations

Technology of Oils and Fats

CO1: Explain composition and classification of fats and oils
CO2: Create knowledge on various characteristics of fats
CO3: Explain the various steps involved in processing of fats
CO4: Create value added products from fats
CO5: To show how to utilize the by-products from oil refining industries

Food Supply Chain and Management

CO1: Explain about the objectives and functions of SCM
CO2: Create knowledge on value chain and value delivery system in SCM
CO3: Formulating the supply chain strategy
CO4: Use the best practices and bench marketing
CO5: Create the logistics organization for effective supply chain management

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Extrusion Technology

CO1: Compare the advantages and disadvantages of extrusion
CO2: Design single and double screw extruder
CO3: Differentiate the chemical and nutritional changes occur in food during extrusion
CO4: Make the different processing of snack foods and animal foods by using extrusion
CO5: Prepare the RTE cereals and texturized vegetable protein

Sugar Confectionery

CO1: Compare the different types of sugars and their properties.
CO2: Apply the uses of oils & fats, milk products, colors and flavors in confectionery items.
CO3: To develop hard boiled sweets, toffee, caramel, fudge and cocoa chocolate.
CO4: To produce gums & jellies, cream paste, liquorice paste & aerated confectionery.
CO5: To produce tablets, lozenges, panned sweets, gums and cereal bars.

Baking Science & Technology

CO1: To plan the ingredients used in bread making.
CO2: To develop bread making process.
CO3: To produce different types of biscuits.
CO4: To construct the recipe for cakes.
CO5: To prepare wafers, frozen dough products and flat breads.

Food Packaging

CO1: Identify the importance, functions and design of packaging.
CO2: Classify the food packaging materials.
CO3: Explain the flexible packaging materials and their properties
CO4: Evaluate the packaging material, package performance and packaging equipment.
CO5: Compare the recent trends in packaging.

Food Plant Sanitation & Waste Management

CO1: Plan food plant layout and equipment design
CO2: Evaluate food plant hygiene and sanitation
CO3: Classify the wastewater treatment systems
CO4: Differentiate the different biological treatments of wastewater
CO5: Explain the utilization of food industry wastes

Programme Outcomes – (B.Com/ BBA)

PO1: Business and Management Knowledge: Apply the in depth knowledge acquired in the Disciplines of Commerce, Business and Management, E-commerce, finance, accounting, auditing, marketing to solve complex problems in the business world.

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PO2: Development of Business Solutions: Identify, formulate and develop solutions in different fields such as Banking, Insurance, and Finance. Core competencies can be gained to impart skills in Accounting, Management and Leadership, Communication and overall personality development.

PO3: Solving Research Problems: Utilize Research Methodology and Project work to infer and interpret data in order to provide valid conclusions in business.

PO4: Modern Business tools and Techniques: explain, select, analyze and apply relevant management techniques, resources, modern business tools, models and practices for holistic development of the learner.

PO5: The Manager, the businessman, the entrepreneur and the Society: Apply contextual and skill-based knowledge to identify the micro and macro factors which affect an organization.

PO6: Practical exposures: identify and equip learners to face the modern day challenges in Commerce and business.

PO7: Globalization and Ethics: Design and apply value based curriculum committed to Professional ethics and responsibilities, so as to render global citizens with a human touch.

B.Com Honours

Programme Specific Outcomes:

PSO1: Demonstrate theoretical cum practical knowledge gained in the study of Financial Management, Financial & Advanced Accounting. Corporate Accounting and Management accounting while utilizing principles, techniques and methods such as Standard Costing. Budgetary Control and Marginal Costing etc.

PSO2: Capability to analyze and demonstrate learning of tax laws and issues relating to individuals and firms, thereby acquiring practical skills to work as an accountant, tax accountant and a Chartered Accountant.

PSO3: Ability to acquire skills in Auditing &Amp; Accounting standards. Business Laws & Banking laws so as to implement them effectively in an organization and pursue advance courses such as CA. CPA, ICWA.

Financial Accounting - I

CO1: Describes the need and importance of accounting.

CO2: Explains about subdivision of journal

CO3: Compares the cashbook and passbook balances to reconcile the difference.

CO4: Analyses the financial position of an organization

CO5: Identifies the mistakes in books of accounts and helps in correcting them.

Principles of Management

CO1: To identify and interpret the various principles and importance of management

CO2: To explain and demonstrate the uses of planning and organizing

CO3: To classify and combine the various techniques of control and coordination.
CO4: To point out and develop the essence of motivation and direction to the students
CO5: To interrelate and understand the essence of leadership and the importance of communication

Fundamentals of Business Statistics

CO1: Organize, manage and present data. Can represent the statistical data in diagrammatic and graphical form.
CO2: Calculate measures of central tendency.
CO3: Analyse the data using measures of dispersion.
CO4: Evaluate the nature for the statistical data using skewness and moments.
CO5: Determine the relation between any two factors using the concepts of correlation and regression analysis.

Managerial Economics

CO1: Understand the basic terms and concepts used in the managerial economics
CO2: Appraise the behaviour of consumers through the demand and indifference analysis
CO3: Interpret the behaviour of producer through supply, production and other related concepts
CO4: Differentiate the market forms and the price and output determination under each type of market.
CO5: Infer the impact of the macro economic factors on the business concerns.

Financial Accounting – II

CO1: Introduces To The basic concepts of partnership and explains the admission of a partner.
CO2: Demonstrates the accounting treatment relating to retirement and death of a partner.
CO3: Identifies the rules applicable for winding up of partnership and insolvency of a partner.
CO4: Shows the method of finding out profits and financial position by using incomplete records.
CO5: Illustrates method of preparing books under hire purchase and instalment purchase system

Banking Theory and Practice

CO1: To identify and illustrate the origin and growth of banking in India.
CO2: To interpret the features of various types of negotiable instruments.
CO3: To demonstrate and apply the steps involved in opening a bank account.
CO4: To appraise and criticize the various types of collateral securities and point out the precautions to be taken by a banker while advancing loans against different types of securities.
CO5: To understand the organizational structure and functions of co-operative banks, Nabard and RBI.

Fundamentals of Business Mathematics

CO1: To solve linear equations.
CO2: To get solutions of real life problems by using logarithms and set theory.
CO3: To solve the problems in business line like banking sector.
CO4: To get maximum profit and minimum loss in company productivity.
CO5: To measure areas & volumes

Advanced Statistics

CO1: Derive the probability mass and density functions of random variables and then to calculate mean and variance.
CO2: Identify the characteristics of different discrete distributions like binomial, poisson and negative binomial distributions.
CO3: Able to perform and analyse hypothesis tests of means, proportions and variances using both one-and two-sample data sets.
CO4: Able to apply the appropriate chi-squared test for independence and goodness of fit.
CO5: Demonstrate understanding of the concepts of time series and its applications in different areas.

E-commerce

CO1: Explain the e-commerce applications and frameworks.
CO2: Identify consumer oriented applications.
CO3: Express differences between EDI and mime.
CO4: Analyze corporate digital library
CO5: Survey the consumer search resources and information.

Advanced Accounting

CO1. States various methods for preparing branch accounts.
CO2. Describes the allocation and interdepartmental transfer of expenses.
CO3. Analyses the financial position of non-trading concerns.
CO4. Evaluate the different situation of capital issue to public issue of shares at par, premium and forfeiture.
CO5. Explains about sources of funds through issue of debentures and various methods of redemption.

Direct Taxes

CO1: To understand the basic definitions of income tax, agricultural income, residential status and exempted incomes.
CO2: To show the computation of income from the head salaries and house property as per it act.
CO3: To identify the income from business, profession and capital gains.
CO4: To compute total income of individuals and huf.
CO5: To assess the tax liability of individuals and huf as per it act.

Business Law

CO1: Demonstrate an understanding of the legal environment of the business.
CO2: Explains legality of object and consideration, discharge of a contract and remedies

available.

CO3: Identify the recognition of transactions involving the sales of goods act.
CO4: Dramatize the application of consumer protection act.
CO5: To recognize intellectual property rights and introduction to it act 2000 and right to information act.

Economic Environment of Business

CO1: To describer changing dimensions of business environment.
CO2: Select key macroeconomic indicators and differentiate between economic growth and development.
CO3: To analyse problems and policies of Indian industries.
CO4: To compare merits and demerits of foreign capital in Indian economy.
CO5: To combine various business regulations for effective corporate governance.

Corporate Accounting

CO1: To understand the various types of capital structures of the company and their representation in the balance sheet, preparation of financial statements with profits before incorporation.
CO2: Explains the valuation of shares and goodwill.
CO3: Analyses amalgamation in the nature of merger and purchase and accounting treatment for internal reconstruction.
CO4: Demonstrates the accounting systems of a banking company under the guidance of rbi.
CO5: Helps to prepare insurance accounts as per IRDAI guidelines.

Company Law

CO1: To develop basic knowledge of provisions of companies act 2013.
CO2: To describe the capital structure of company through issues of shares and alteration of share capital.
CO3: Explain the borrowing powers of a company and consequences of ultra vires borrowing.
CO4: State various provisions of the companies act relating to company management and meetings.
CO5: To identify various modes of winding up and legal provisions applicable.

Indirect Taxes

CO1: To describe basic scheme of GST, GST council power and functions.
CO2: To explain various GST acts and also various definitions
CO3: To identify the registration procedure, levying of GST and exemptions
CO4: To analyse different types of assessments and returns under GST
CO5: To appraise the exim procedure as per customs legislations in India.

Research Methodology

CO1: To understand and interpret the basic meaning of research, to define the research problem at hand and construct the procedure for undertaking research.
CO2: To formulate hypothesis and develop an appropriate research design.
CO3: To classify the different sources of data and analyze the various methods of data

collection.

CO4: To develop the most appropriate sample size and design as well as determination of sampling and non-sampling errors.

CO5: To classify the various types of attitude measurement scales and applies the principles and format of report writing and presentation.

Marketing Management

CO1: Explains the concept of marketing and sketches the marketing environment.

CO2: Classifies the market and identifies the various market segments

CO3: Point outs the marketing mix with reference to product and price

CO4: Analyzes the promotion mix and the channels of distribution.

CO5: Explains service marketing mix and points out the importance of direct and online marketing.

Advanced Corporate Accounting

CO1: To explain legal provisions of holding company's under schedule iii of companies act and preparation of consolidated balance sheet.

CO2: To show the capital structure of holding company and subsidiary companies and preparation of accounts relating to intercompany transaction.

CO3: To analyse public utility company's double accounting system.

CO4: To differentiate between operating and financial lease.

CO5: To appraise the liquidation process of the company through preparation of statement of affairs, deficiency account, liquidated financial statement.

International Marketing and Export Management

CO1: Analyze the process of international markets and classify India's export trade

CO2: Describe the important factors of international marketing environment and differentiate marketing research, market selection, and market segmentation

CO3: Analyze the importance of product and distribution strategies

CO4: Differentiate the need for promotion mix strategies and pricing decisions

CO5: Explain foreign exchange strategies, differentiate balance of payments and balance of trade, and interpret international economic organizations

Corporate Governance and Business Ethics

CO1: Identify and explain the importance of values and ethics.

CO2: Analyze and interpret the various theories of ethical value system.

CO3: Point out the relationship between law and ethics and understand the impact of law on the business.

CO4: Explain the corporate governance codes, transparency and disclosure in the corporate.

CO5: Identify and point out the global issues of governance.

Financial Management – I

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CO1: To interpret the concept of business finance, finance decision and functions of finance manager.
CO2: To understand the concept of capital budgeting and evaluate npv and cash flows for investment analysis.
CO3: To explain the basic concepts of cost of capital and its significance.
CO4: To distinguish between financial and operating leverages and to explain the capital structure theories.
CO5: To appraise the knowledge on dividend theories.

Costing Accounting and Control – I

CO1: To understand importance of cost accounting in organization.
CO2: To describe the principles of managing inventories of materials and the procedures for accounting inventory.
CO3: To describe the principles and practice of costing labour to a business.
CO4: To describe the principles and process of overhead cost analysis.
CO5: To apply the operation of process costing methods.

Accounting for Management – I

CO1: To explain an overview of management accounting, its need, scope and functions.
CO2: To prepare the financial statements and show its analysis and interpretation.
CO3: To apply different formula in ratio analysis.
CO4: To illustrate the preparation of funds flow statement.
CO5: To illustrate the preparation of cash flow statement.

Financial Markets and Institutions

CO1: To classify about financial markets and services.
CO2: To explain about the capital markets with reference to stock market as per SEBI regulations.
CO3: To sketch the working of money market in the Indian financial system.
CO4: To analyse the derivatory and depository system.
CO5: To appraise financial service system relating to mutual funds and merchant banking.

Human Resource Management

CO1: To understand the concept of HRM, functions and changing role of a HR manager
CO2: To distinguish between the various methods of job design and interpret the techniques of acquisition of human resource.
CO3: To explain the importance of HRP and point out the various HRD approaches for work life balance and describe the concept of job evaluation.
CO4: To analyse the core concepts of HRD, TQM and understand the concept of career development.
CO5: To explain the various concepts of worker's participation and quality of work life.

Accounting for Management – II

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CO1: To find/ understand the relation among cost, volume & profit
CO2: Enable the students to prepare various kinds of budgets.
CO3: To solve linear programming problems, transportation problems.
CO4: To understand responsibility accounting, human resource accounting & amp; inflation accounting.
CO5: To create and write the various reports to provide the required information for management.

Labour Law

CO1: To understand various provisions of factories act.
CO2: To explain the rules regarding workmen compensation and provident fund act.
CO3: To illustrate the gross profits of a banking company and non-banking company.
CO4: To show various adjudication machinery.
CO5: Tells about rights, duties and liabilities of registered trade unions.

Financial Management – II

CO1: To show the working capital management of an organization.
CO2: To demonstrate various techniques of inventory management and receivables management.
CO3: To prepare cash budget as part of cash management.
CO4: To analyse security and portfolio management.
CO5: To appraise mergers and acquisitions for restructuring of corporation.

Costing Accounting and Control – II

CO1: To distinguish between service costing, job costing and batch costing systems.
CO2: To prepare contract accounts with reference to long term and continuous projects.
CO3: To show the preparation of process accounts.
CO4: To compare variances between standard cost and actual cost
CO5: To develop tenders and quotations

Auditing and Accounting Standards

CO1: To understand the basic concepts of auditing and the nature and scope of auditing.
CO2: To organize the various steps in an auditing process and point out the techniques of vouching of cash payments and receipts.
CO3: To analyze the features and importance of internal control, check and audit.
CO4: To prepare different types of audit reports and explain the procedure for appointment and removal of a company auditor.
CO5: To understand the regulatory framework in which accounting standards are formulated and operated

B.Com Advertisement Sales Promotion and Sales Management

Programme Specific Outcomes

PSO1: Understand the nature and basic concepts of Accounts and Marketing, and how effectively helpful to the business organizations.
PSO2. Analyze the relationship between business and society, and the various ways business

respond to socio-political-religious and economic factors.

PSO3. Apply basic philosophies and tools of marketing management

PSO4. Measure the application of various management accounting tools in decision making.

Course Outcomes

Financial Accounting – I

CO1: Describes the need and importance of accounting.
CO2: Explains about subdivision of journal
CO3: Compares the cashbook and passbook balances to reconcile the difference.
CO4: Analyses the financial position of an organization
CO5: Identifies the mistakes in books of accounts and helps in correcting them.

Business Economics

CO1: Understand the basic terms and concepts used in the managerial economics
CO2: Appraise the behaviour of consumers through the demand and indifference analysis
CO3: Interpret the behaviour of producer through supply, production and other related concepts
CO4: Differentiate the market forms and the price and output determination under each type of market.
CO5: Infer the impact of the macro economic factors on the business concerns.

Financial Accounting – II

CO1: Introduces to the basic concepts of partnership and explains the admission of a partner.
CO2: Demonstrates the accounting treatment relating to retirement and death of a partner.
CO3: Identifies the rules applicable for winding up of partnership and insolvency of a partner.
CO4: Shows the method of finding out profits and financial position by using incomplete records.
CO5: Illustrates method of preparing books under Hire purchase and instalment purchase system

Advanced Accounting

CO1: States various methods for preparing branch accounts.
CO2: Describes the allocation and interdepartmental transfer of expenses.
CO3: Analyses the financial position of non-trading concerns.
CO4: Evaluate the different situation of capital issue to public issue of shares at par, premium and forfeiture.
CO5: Explains about sources of funds through issue of debentures and various methods of redemption.

Business Law

CO1: Demonstrate an understanding of the legal environment of the business.
CO2: Explains legality of object and consideration, discharge of a contract and remedies available.
CO3: Identify the recognition of transactions involving the sales of goods act.

CO4: Dramatize the application of consumer protection act.
CO5: To recognize intellectual property rights and introduction to IT act 2000 and right to information act.

Corporate Accounting

CO1: Understands the various types of capital structures of the company and their representation in the balance sheet, preparation of financial statements with profits before incorporation.
CO2: Explains the valuation of shares and goodwill.
CO3: Analyses amalgamation in the nature of merger and purchase and accounting treatment for internal reconstruction.
CO4: Demonstrates the accounting systems of a banking company under the guidance of RBI.
CO5: Helps to prepare insurance accounts as per IRDAI guidelines.

Marketing Management

CO1: Explains the concept of marketing and sketches the marketing environment.
CO2: Classifies the market and identifies the various market segments
CO3: Point outs the marketing mix with reference to product and price
CO4: Analyzes the promotion mix and the channels of distribution.
CO5: Explains service marketing mix and points out the importance of direct and online marketing.

Financial Management

CO1: To interpret the concept of business finance, finance decision and functions of finance manager.
CO2: To understand the concept of capital budgeting and evaluate NPV and Cash Flows for investment analysis.
CO3: To explain the basic concepts of cost of capital and its significance.
CO4: To distinguish between financial and operating leverages and to explain the capital structure theories.
CO5: To appraise the knowledge on dividend theories.

Costing Accounting

CO1: To understand importance of cost accounting in organization.
CO2: To describe the principles of managing inventories of materials and the procedures for accounting inventory.
CO3: To describe the principles and practice of costing labour to a business.
CO4: To describe the principles and process of overhead cost analysis.
CO5: To apply the operation of process costing methods.

Financial Statement Analysis

CO1: To explain an overview of management accounting, Its need, Scope and functions.

CO2: To prepare the financial statements and show its analysis and interpretation and to apply different formula in ratio analysis.
CO3: To illustrate the preparation of funds flow statement.
CO4: To illustrate the preparation of cash flow statement.
CO5: To find/understand the relation among cost, volume & profit and enable the students to prepare various kinds of budgets.

Human Resource Management
CO1: To understand the concept of HRM, functions and changing role of a HR manager
CO2: To distinguish between the various methods of job design and interpret the techniques of acquisition of human resource.
CO3: To explain the importance of HRP and point out the various HRD approaches for career planning and development and describe the concept of Performance evaluation and workers participation in management.
CO4: To analyze the core concepts of International HRM and understand the aspects of E-HRM.
CO5. To explain the various concepts of Knowledge Management and role of leader in organization

B.Com. Generals

Programme Specific Outcomes
PSO1: Appraise the multi-dimensional business situations and assess the financial health of companies by understanding and applying the wide knowledge of accounting, technical and analytical skills obtained from various core courses such as Financial Accounting, Financial Management, Business Statistics, Business Economics, International Business etc.
PSO2: Develop problem solving skills, technical skills, leadership skills, communication skills and inter personal skills so as to enable them to establish and/or manage their business effectively.
PSO3: Integrate knowledge, skill and attitude that will sustain an environment of learning, creativity and ethics among the students and also make them good citizens with excellent professional attitude in the corporate world.
PSO4: Create better solutions to the problems in the field of commerce by advancing research in Finance, Marketing, and Human Resources etc.

Business English – I
CO1: Students will be able to identify elements, forms and style of letters.
CO2: They will be able to create quotations related to inviting, sending and placing orders.
CO3: Students will be able to identify qualities and functions of a sales letter.
CO4: Students will be able to use the format of a sales letter.
CO5: They will also be able to understand and write the functions, structure and types of memorandum.
CO6: Students will be able to understand and design a notice, agenda and minutes.

CO7: They will be able to demonstrate the guidelines for answering and making effective telephone calls.
CO8: They will be able to understand and implement note making.
CO9: Students will use the strategies for reading comprehension and recognize the aspects of efficient training.
CO10: They will also have a better understanding of scanning and proof reading incomprehension.

Indian Heritage and Culture

CO1: To understand better about the origin of ancient Indian culture and the contributions of great rulers from both north and south India for Indian culture in ancient days.
CO2: To indicate how Persian culture entered into India and its influence.
CO3: To express how Indian orthodox society turn into modern and western lifestyle in19th century.
CO4: To point out the various challenges faced by the youth of Indian society, the evils of terrorism and its impact on society.
CO5: To identify and express various gender issues like women rights and LGBT issues.

Business Economics

CO1: To demonstrate understanding of concepts of business environment.
CO2: To apply different methods of demand forecasting based on time period and nature of product.
CO3: To analyze different types of production function
CO4: To identify various market structures and analyze price-output decision in different markets
CO5: To analyze importance of international trade to Indian economy and evaluate effects of government policy on trade.

Fundamentals of IT

CO1: Understand basic computer terminology and number systems.
CO2: Explain about operating systems, and its types.
CO3: Identify different applications of information technology
CO4: Classify phases of software development life cycle
CO5: Categorize modern means of communications, types of networks and topologies

Financial Accounting –I

CO1: To describe the need and importance of accounting and infer the various principles of accounting
CO2: Explain about sub divisions of journal.
CO3: Compare cash book and pass book balances and reconcile the differences.
CO4: To analyze the financial position of an organization
CO5: To identify the mistakes in books of accounts and rectifying them

Business Organization

CO1: To interpret the fundamental concepts of business and classify the features of trade, industry and commerce.

CO2. To identify the various characteristics and functions of an entrepreneur.
CO3. To distinguish and sub divide the various forms of business organization.
CO4. To appraise, criticize and compare the advantages, disadvantages and suitability of sole proprietorship and partnership form of business organization.
CO5. To plan, combine and organize the various stages involved in the formation of a joint stock company.

Business English –II

CO1: Students will be able to identify the elements of claim and adjustment letters.
CO2: Students will also be able to draft claim letters and adjustment letters.
CO3: They will be able to identify nature and types of credit letters.
CO4: Students will be able to recognize tone and style of collection letters.
CO5: Students will comprehend the general guidelines to write application letters and resumes.

CO6: They will also be able to execute the form and content of an application letter and resume.

CO7: Students will also be able to understand characteristics and importance of business reports.

CO8: They will also be able to prepare a good business report.

CO9: Students will be able to understand the techniques of describing machines and mechanisms.

CO10: They will also be able to describe and create good technical reports.

Value Education and Personality Development

CO1: Students will be able to identify accepted norms and counter values.
CO2: They will be able to differentiate the various dimensions of human development.

CO3: Students will be able to demonstrate love and experience of god.

CO4: They will be able to identify the basic issues of life and happiness as a life goal.

CO5: They will able to understand the importance of concern for others.

CO6: They will able to critique the various problems that deter the growth of the society.

CO7: The students will be able to recognize the traits of a good personality.

CO8: They will be able identify their personality by self-exploration.

CO9: Students will be able to interpret the purpose of life and goal setting.

CO10: They will be able to learn self-management.

Fundamentals of Business Mathematics

CO1: Construct algebraic models and use the quadratic formula to describe real-life situations. Be able to decide what type of model fits the situation best:

CO2: Analyze and use linear models to answer questions about the situations they represent knowledge including the mathematical notation and terminology used in matrices**.**

CO3: Construct mathematical expressions that involve matrices and linear systems of linear equations.

CO4: Apply index laws to simplify and evaluate arithmetic expressions. Understand particular types of sequences called arithmetic progression and also find arithmetic mean (am) between two given numbers.

CO5: Solve by converting the logarithmic equations to exponential equations. Evaluate the impact of compound interest on simple financial decisions.

Business Statistics – I

CO1: Organize, manage and present data. Understand the merits and limitations in using the statistical data.

CO2: Represent the statistical data in the form of diagrams and graphs.

CO3: Analyze statistical data using measures of central tendency.

CO4: Compare the homogeneity of the statistical data using different methods of dispersion.

CO5: Identify the symmetric and nature of the statistical data using the concepts of skewness and moments.

Financial Accounting – II

CO1: To explain the basic concepts of partnership and the admission of partner.

CO2: To demonstrate the accounting treatment relating to retirement and death of partner.

CO3: To identify the rules applicable for winding up of a partnership and insolvency of partner.

CO4: To show the methods of finding out the profits and financial position by using incomplete records.

CO5: Illustrate methods of preparing books under hire purchase and instalment system.

Principles of Management

CO1: To identify and interpret the various principles and importance of management.

CO2: To explain and demonstrate the importance of planning and organizing.

CO3: To classify and combine the various techniques of control and coordination.

Co4. To point and develop the essence of motivation and direction to the students.

Co5. To inter relate the essence of leadership and the importance of communication.

Banking

CO1: To identify and illustrate the origin and growth of banking in India.

CO2: To interpret the features of various types of negotiable instruments.

CO3: To demonstrate and apply the steps involved in opening a bank account.

CO4: To appraise and criticize the various types of collateral securities and point out the precautions to be taken by a banker while advancing loans against different types of

securities.

CO5: To understand the organizational structure and functions of co-operative banks, nabard and RBI.

Corporate Governance and Business Ethics

CO1: To identify and explain the importance of values and ethics

CO2: To analyze and interpret the various theories of ethical value system.

CO3: To point out the relationship between law and ethics and understand the impact of law on business.

CO4: To explain the various corporate governance codes, transparency and disclosure in the corporate

CO5: To identify and point out the global issues of governance.

Business Statistics – II

CO1: Interpret the correlation between two variables.

CO2: Apply the principles of linear regression and correlation, including least square method, predicting a particular value of y for a given value of x and significance of the correlation coefficient.

CO3: Plan the future events using the concepts of time series analysis.

CO4: Select the appropriate index numbers and calculates indices from given data.

CO5: Compare and analyze the different sampling techniques like simple, stratified and systematic sampling.

Advanced Accounting

CO1: State the various methods for preparing branch accounts.

CO2: Describe the allocation and interdepartmental transfer of expenses.

CO3: Analyze the financial position of non-trading concerns.

CO4: Evaluate the different situation of capital issue to public issue of shares at par, premium and forfeiture.

CO5: Explain about sources of funds through issue of debentures and various methods of redemption.

Banking Theory & Practice

CO1: To identify and illustrate the origin and growth of banking in India.

CO2: To interpret the features of various types of negotiable instruments.

CO3: To demonstrate and apply the steps involved in opening a bank account.

CO4: To appraise and criticize the various types of collateral securities and point out the precautions to be taken by a banker while advancing loans against different types of securities.

CO5. To understand the organizational structure and functions of co-operative banks, Nabard and RBI.

Direct taxes

CO1: To understand the basic definitions of income tax, agricultural income, residential

status and exempted incomes.
CO2: To show the computation of income from the head salaries and house property as per IT act.
CO3: To identify the income from business, profession and capital gains.
CO4: To compute total income of individuals and huf.
CO5: To assess the tax liability of individuals and huf as per IT act.

Environmental Studies and Gender Sensitization

CO1: Understand the importance of environmental education, conservation of natural resources & understand the importance of ecosystems and biodiversity
CO1: Understand the pollution problems and apply the environmental science knowledge on solid waste management, disaster management
CO3: Apply the environmental science knowledge to improve the resources
Evaluate and understand the sustainable environmental conditions and control methods
CO4: Identify the interactions and intersections of identities (e.g., gender, race, ethnicity, class, sexuality, and so on) and assess the ways in which they contribute to instances of privilege and power dynamics across cultures, space, and time. And their problems
CO5: Understand the gender problems and ways of addressing them, including interactions across local to global scales in communities and overcome inequalities with legislations

Corporate Accounting

CO1: To understand the various types of capital structures of the company and their representation in the balance sheet, preparation of financial statements with profits before incorporation.
CO2: Explain the valuation of shares and goodwill.
CO3: Analyze amalgamation in the nature of merger and purchase and accounting treatment for internal reconstruction.
CO4: Demonstrate the accounting systems of a banking company under the guidance of RBI.
CO5: To prepare insurance accounts as per IRDAI guidelines.

Financial Services and Markets

CO1: To explain and analyze the various functions and importance of Indian financial system.
CO2: To classify capital market and assess the rational content and current reforms to capital market regulations
CO3: To analyze the features of money market and list out the various money market instruments
CO4: To identify and interpret the services provided by a merchant banker.
CO5: To explain the process of securitization of debt and compare the various types of financial derivatives

Indirect Taxes

CO1: To describe basic scheme of GST, GST council power and functions.
CO2: To explain various GST acts and also various definitions
CO3: To identify the registration procedure, levying of GST and exemptions

CO4: To analyze different types of assessments and returns under GST
CO5: To tell the GST network, GST suvida providers and GST ecosystem.

Business Law

CO1: Demonstrate an understanding of the legal environment of the business.
CO2: Explains legality of object and consideration, discharge of a contract and remedies available.
CO3: Identify the recognition of transactions involving the sales of goods act.
CO4: Dramatize the application of consumer protection act.
CO5: To recognize intellectual property rights and introduction to it act 2000 and right to information act.

Research Methodology

CO1: To understand and interpret the basic meaning of research, to define the research problem at hand and construct the procedure for undertaking research.
CO2: To formulate hypothesis and develop an appropriate research design.
CO3: To classify the different sources of data and analyze the various methods of data collection.
CO4: To develop the most appropriate sample size and design as well as determination of sampling and non-sampling errors.
CO5: To classify the various types of attitude measurement scales and applies the principles and format of report writing and presentation.

International Business

CO1: Explain the overview of international business and demonstrate the environment of international business.
CO2: Explain about the various forms of trade regulation and integration.
CO3: Sketch the various modes of entering the international market.
CO4: Point out the conceptual framework of e-business and policy framework for global E-business.
CO5: Analyze the intercultural communication on the global perspective.

Public Relation and Corporate Communication

CO1: To understand the importance of a positive attitude and ways to build a positive attitude.
CO2: To apply the various principles and techniques of time management and stress management.
CO3: To point out and demonstrate the various methods of enhancing creativity.
CO4: To demonstrate communication and soft skills and develop matter for speech.
CO5: To choose the right career and identify the pathway to a successful career.

Human Resource Management

CO1: To understand the concept of HRM, functions and changing role of an HR manager.

CO2: To distinguish between the various methods of job design and interpret the techniques of acquisition of human resource.
CO3: To demonstrate and classify the methods of training and motivating human resources in an organization.
CO4: To analyze the various aspects of e-HRM.
CO5: To point out and appraise the recent trends in HRM.

Financial Management

CO1: To interpret the concept of business finance, finance decision and functions of finance manager.
CO2: Able to understand the concept of cost of capital and leverages and calculate the cost of capital and leverages of a business concern
CO3: To interpret the concept of capital budget and will be able to apply the techniques of ARR, NPV, IRR, PI etc.
CO4: To understand the concept of working capital management and apply the concept and able to determine working capital requirement of a business organization.
CO5: To interpret the concept of cash management and cash budgeting and receivables management.

Cost Accounting - I

CO1: To understand the basics of cost, scope, methods of costing.
CO2: To explain the principles of managing inventory, cost account of materials, procedure for accounting inventory.
CO3: To describe the principles and practice of labour cost to a business.
CO4: To describe the principles and procedures of overhead cost analysis.
CO5: To explain the need for reconciliation of financial and cost accounting , cost control and reduction.

Entrepreneurship Development

CO1: Understand the nature and basic concept of entrepreneur and entrepreneurship.
CO2: Demonstrate the knowledge of entrepreneurship development programmes
CO3: Recognise the need for project report and analyze the concepts of project formulation
CO4: Interpret factory design and factory layout and identify the importance of standardization and quality control
CO5: Differentiate small and large scale industries and identify the reasons for sickness of small scale industries

Marketing Management

CO1: Explains the concept of marketing and sketches the marketing environment.
CO2: Classify the marketing environment and identify the various forces operating in the marketing environment.
CO3: Point out the marketing mix with reference to product and price.
CO4: Analyze the promotion mix and the channels of distribution.
CO5: To formulate the service marketing mix and points out the importance of direct and

online marketing.

Auditing and Accounting Standards

CO1: To understand the basic concepts of auditing and the nature and scope of auditing.
CO2: To organize the various steps in an auditing process and point out the techniques of vouching of cash payments and receipts.
CO3: To analyze the features and importance of internal control, check and audit.
CO4: To prepare different types of audit reports and explain the procedure for appointment and removal of a company auditor.
CO5: To understand the regulatory framework in which accounting standards are formulated and operated.

Company Law

CO1: To develop basic knowledge of provisions of companies act 2013
CO2: To describe the capital structure of company through issue of shares and alteration of share capital.
CO3: To explain the borrowing powers of a company and consequences of ultra vires borrowings.
CO4: To state the various provisions of the companies act relating to company management and meetings.
CO5: To identify various modes of winding up and legal provisions applicable.

International Marketing and Export Management

CO1: To analyze the process of international marketing and classify india's export trade.
CO2: To describe the important factors of international marketing environment differentiate marketing research, market selection and market segmentation.
CO3: Analyze the importance of production and distribution strategies.
CO4: Differentiate the need for promotion mix strategies and pricing decisions.
CO5: Explain foreign exchange strategies, differentiate balance of payments balance of trade and interpret international economic organizations.

Principles of Insurance

CO1: To understand the various concepts of insurance and risk management
CO2: To explain the role of insurance in economic development and distinguish between life and non-life insurance.
CO3: To analyze the need and behaviour of insurance customers and understand the concept of pooling in insurance.
CO4: To appraise and criticize the various insurance plans and products available in the insurance market.
CO5: To classify different types of financial losses and principles.

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E-Commerce

CO1: Describe electronic commerce framework and www architecture.
CO2: Classify mercantile process models and types of electronic payment systems.
CO3: Apply EDI implementations and analyze intra organizational electronic commerce.
CO4: Design corporate digital library, advertising and marketing on the internet.
CO5: Identify consumer search and resource discovery, on demand education and digital copy rights.

Financial Statement Analysis

CO1: To describe the role of management accounting information in managerial planning and decision making
CO2: To prepare and interpret the comparative and common size statements and ratio analysis
CO3: To analyze funds flow and to prepare the fund flow statement
CO4: To analyze cash flow and prepare cash flow statement
CO5: To develop an understanding of budgetary control methods.

Cost Accounting- II

CO1: To distinguish between service costing, job costing and batch costing.
CO2: To prepare cost sheet with reference to long term continuous project.
CO3: To prepare process costing account.
CO4: To compare variance in standard and actual cost.
CO5: To develop tenders and quotations.

B.Com Computers

Programme Specific Outcomes:

Students will be able to:

PSO1: Understand the role of different business organizations and its challenges
PSO2: Demonstrate accounting skills for business and service oriented activities and interpret the results to various users
PSO3: Analyze the importance of various disciplines of commerce – finance, marketing, auditing, management etc.
PSO4: Appraise problem solving techniques through computers for business solutions
PSO5: Create and empower students with progressive attitude to pursue higher education and research

Business Economics

CO1: Demonstrate understanding of concepts of business economics.
CO2: Apply different methods of demand forecasting based on time period and nature of product.
CO3: Analyze different types of production function

CO4: Compare various market structures and analyze price-output decision in different markets
CO5. Analyze importance of international trade to Indian economy and evaluate effects of government policy on trade

Financial Accounting – I
CO1: Describe the need and importance of accounting.
CO2: Explain about subdivision of journal
CO3: Compare the cashbook and passbook balances to reconcile the difference.
CO4: Analyze the financial position of an organization
CO5: Identify the mistakes in books of accounts and helps in correcting them.

Business Organisation and Management
CO1: Identify and interpret the various principles and importance of management
CO2: Explain and demonstrate the uses of planning and organizing
CO3: Classify and combine the various techniques of control and coordination.
CO4: Point out and develop the essence of motivation and direction to the students
CO5: Interrelate and understand the essence of leadership and the importance of communication

Fundamentals of Information Technology
CO1: Understand basic computer terminology and number systems
CO2: Explain about operating systems, and its types.
CO3: Identify different applications of information technology
CO4: Classify phases of software development life cycle
CO5: Compare modern means of communications, types of networks and topologies

Indian Economy
CO1. Explain basic characteristics of Indian economy
CO2. Illustrate the contribution of agriculture sector to India's development
CO3. To explain impact of new economic reforms in Indian economy
CO4. To compare types of unemployment and identify causes of inflation.
CO5. To critically evaluate the impact of foreign investment in India.

Business Mathematics
CO1. To apply various concepts of quadratic equations to find solution of real life problems
CO2. Evaluate different idea of logarithms to simplify multiplication and division of numbers
CO3. Classify different types of matrices and procedures to find solution of real life problems
CO4. Describe the theoretical concepts of differentiations
CO5: Identify the differentiation concept to find maximum profit and minimum loss in business process

POs, PSOs, COs of All Programme for the Academic Year - 2020-21

Financial Accounting – II

CO1: Introduce basic concepts of partnership and explains the admission of a partner.
CO2: Demonstrate accounting treatment relating to retirement and death of a partner.
CO3: Identify the rules applicable for winding up of partnership and insolvency of a partner.
CO4: Show the method of finding out profits and financial position by using incomplete records.
CO5: Illustrate method of preparing books under hire purchase and installment purchase system

Programming in 'C'

CO1: Describe the structure of 'c' program
CO2: Analyze the application of controls structures and arrays
CO3: Classify the types of functions and storage classes
CO4: Apply pointers to enhance program efficiency
CO5: Evaluate the file system

Business Statistics

CO1: Explain the statistical terminology and consider the options for designing a sample.
CO2: Represent the statistical data in diagrammatic and graphical form.
CO3: Identify the different statistical techniques used to calculate the descriptive statistics.
CO4: Analyze the relation between any two factors using the concepts of correlation and regression analysis
CO5: Plan the future events using the concepts of time series analysis and also to determine the value of money, inflation and deflation

Advanced Accounting

CO1: State various methods for preparing branch accounts.
CO2: Describe the allocation and interdepartmental transfer of expenses.
CO3: Analyze the financial position of non-trading concerns.
CO4: Evaluate the different situation of capital issue to public issue of shares at par, premium and forfeiture.
CO5: Explain about sources of funds through issue of debentures and various methods of redemption.

Business Law

CO1: Demonstrate an understanding of the legal environment of the business.
CO2: Explain legality of object and consideration, discharge of a contract and remedies available.
CO3: Identify the recognition of transactions involving the sales of goods act.
CO4: Dramatize the application of consumer protection act.
CO5: Recognize intellectual property rights and introduction to it act 2000 and right to information act.

Direct Taxes

CO1: Understand the basic definitions of income tax, agricultural income, residential status

and exempted incomes.
CO2: Show the computation of income from the head salaries and house property as per it act.
CO3: Identify the income from business, profession and capital gains.
CO4: Compute total income of individuals and huf.
CO5: Assess the tax liability of individuals and huf as per it act.

Object Oriented Programming through 'C++'
CO1: Describe the concepts of object oriented programming
CO2: Apply control structures to write programs for application development
CO3: Differentiate the types of constructors
CO4: Demonstrate polymorphism and types of inheritance
CO5: Evaluate the concept of templates and files

Environmental Studies and Gender Sensitization
CO1: Understand the importance of environmental education, conservation of natural resources & understand the importance of ecosystems and biodiversity
CO2: Understand the pollution problems and apply the environmental science knowledge on solid waste management, disaster management
CO3: Apply the environmental science knowledge to improve the resources, evaluate and understand the sustainable environmental conditions and control methods
CO4: Identify the interactions and intersections of identities (e.g., gender, race, ethnicity, class, sexuality, and so on) and assess the ways in which they contribute to instances of privilege and power dynamics across cultures, space, and time. And their problems
CO5: Understand the gender problems and ways of addressing them, including interactions across local to global scales in communities and overcome inequalities with legislations

Research Methodology
CO1: Understand and interpret the basic meaning of research, to define the research problem at hand and construct the procedure for undertaking research.
CO2: Formulate hypothesis and develop an appropriate research design.
CO3: Classify the different sources of data and analyze the various methods of data collection.
CO4: Develop the most appropriate sample size and design as well as determination of sampling and non-sampling errors.
CO5: Classify the various types of attitude measurement scales and applies the principles and format of report writing and presentation.

Corporate Accounting
CO1: Understand the various types of capital structures of the company and their representation in the balance sheet, preparation of financial statements with profits before incorporation.
CO2: Explain the valuation of shares and goodwill.
CO3: Analyze amalgamation in the nature of merger and purchase and accounting treatment

for internal reconstruction.
CO4: Demonstrate the accounting systems of a banking company under the guidance of rbi.
CO5: Help to prepare insurance accounts as per irdai guidelines.

Banking Theory and Practice
CO1: Identify and illustrate the origin and growth of banking in India.
CO2: Interpret the features of various types of negotiable instruments.
CO3: Demonstrate and apply the steps involved in opening a bank account.
CO4: Appraise and criticize the various types of collateral securities and point out the precautions to be taken by a banker while advancing loans against different types of securities.
CO5: Understand the organizational structure and functions of co-operative banks, Nabard and RBI.

Indirect Taxes
CO1: Describe basic scheme of GST, GST council power and functions.
CO2: Explain various GST acts and also various definitions
CO3: Identify the registration procedure, levying of GST and exemptions
CO4: Analyze different types of assessments and returns under GST
CO5: Tell the GST network, GST suvida providers and GST eco system.

Indirect taxes
Co1. Describe basic scheme of GST, GST council power and functions.
Co2. Explain various GST acts and also various definitions
Co3. Identify the registration procedure, levying of GST and exemptions
Co4. Analyze different types of assessments and returns under GST
Co5. Tell the GST network, GST suvida providers and GST eco system.

Database Management System
CO1: Understand database design using e-r diagrams
CO2: Classify normalization and relational algebra
CO3: Create database tables to implement queries
CO4: Analyze procedural languages and storage media
CO5: Evaluate transactions and its recovery system

Marketing Management
CO1: Explain the concept of marketing and sketches the marketing environment.
CO2: Classify the market and identifies the various market segments
CO3: Point out the marketing mix with reference to product and price
CO4: Analyze the promotion mix and the channels of distribution.
CO5: Explain service marketing mix and points out the importance of direct and online marketing.

International Business
CO1: Explain the overview of international business and demonstrate the environment of

international business.
CO2: Explain about the various forms of trade regulation and integration.
CO3: Sketch the various modes of entering the international market.
CO4: Point out the conceptual framework of e-business and policy framework for global e-business.
CO5: Analyze the intercultural communication on the global perspective.

Human Resource Management
CO1: Understand the concept of HRM, functions and changing role of a HR manager
CO2: Distinguish between the various methods of job design and interpret the techniques of acquisition of human resource.
CO3: Explain the importance of HRP and point out the various HRD approaches for work life balance and describe the concept of job evaluation.
CO4: Analyze the core concepts of HRD, TQM and understand the concept of career development.
CO5: Explain the various concepts of worker's participation and quality of work life.

Corporate Governance and Business Ethics
CO1: Identify and explain the importance of values and ethics.
CO2: Analyze and interpret the various theories of ethical value system.
CO3: Point out the relationship between law and ethics and understand the impact of law on the business.
CO4: Explain the corporate governance codes, transparency and disclosure in the corporate.
CO5: Identify and point out the global issues of governance.

Financial Management
CO1: Interpret the concept of business finance, finance decision and functions of finance manager.
CO2: Understand the concept of capital budgeting and evaluate NPV and cash flows for investment analysis.
CO3: Explain the basic concepts of cost of capital and its significance.
CO4: Distinguish between financial and operating leverages and to explain the capital structure theories.
CO5: Appraise the knowledge on dividend theories.

Cost Accounting
CO1: Understand importance of cost accounting in organization.
CO2: Describe the principles of managing inventories of materials and the procedures for accounting inventory.
CO3: Describe the principles and practice of costing labour to a business.
CO4: Describe the principles and process of overhead cost analysis.
CO5: To apply the operation of process costing methods

E-Commerce
CO1: Understand the framework for web applications
CO2: Classify the consumer oriented applications and electronic payment systems

CO3: Evaluate the role of internal commerce and impact of advertising
CO4: Appraise digital libraries in information search and discovery
CO5: Analyze technological components, digital copyrights and mobile commerce

Java

CO1: Write java programs and differentiate between object-oriented programming and procedure-oriented programming.
CO2: Apply object-oriented programming features for solving a given problem.
CO3: Create packages and interfaces mechanisms.
CO4: Analyze exception-handling, threads and applets
CO5: Create interactive GUI programs using AWT package.

Auditing and Accounting Standards

CO1: Understand the basic concepts of auditing and the nature and scope of auditing.
CO2: Organize the various steps in an auditing process and point out the techniques of vouching of cash payments and receipts.
CO3: Analyze the features and importance of internal control, check and audit.
CO4: Prepare different types of audit reports and explain the procedure for appointment and removal of a company auditor.
CO5: Understand the regulatory framework in which accounting standards are formulated and operated.

Company Law

CO1: Develop basic knowledge of provisions of companies' act 2013.
CO2: Describe the capital structure of company through issues of shares and alteration of share capital.
CO3: Explain the borrowing powers of a company and consequences of ultra-vires borrowing.
CO4: State various provisions of the companies act relating to company management and meetings.
CO5: Identify various modes of winding up and legal provisions applicable.

System Analysis and Design

CO1: Demonstrate an understanding of the importance of system development environment
CO2: Interrelate the appropriate data flow diagram methodology
CO3: Apply the concepts of designing interfaces and dialogs
CO4: Differentiate between client servers and file server architecture
CO5: Analyze object oriented methods and different UML diagrams

Management Information Systems

CO1: Understand the overview of management information systems
CO2: Describe the is framework and its types and its strategic uses
CO3: Sketch the systems development processes
CO4: Appraise the management challenges – security and processing
CO5: Classify business applications of information technology

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Entrepreneurship Development

CO1: Understand the nature and basic concept of entrepreneur and entrepreneurship.
CO2: Demonstrate the knowledge of entrepreneurship development programmes
CO3: Recognise the need for project report and analyze the concepts of project formulation
CO4: Interpret factory design and factory layout and identify the importance of standardization and quality control
CO5: Differentiate small and large scale industries and identify the reasons for sickness of small scale industries

Financial Statement and Analysis

CO1: Describe the role of management accounting information in managerial planning and decision making
CO2: Prepare and interpret the comparative and common size statements and ratio analysis
CO3: To analyze funds flow and to prepare the fund flow statement
CO4: Analyze cash flow and prepare cash flow statement
CO5: Develop an understanding of budgetary control methods.

Web Programming

CO1: Describe the structure of html and various tags
CO2: Apply style sheets to web pages
CO3: Apply JavaScript to write programs
CO4: Categorize and distinguish objects in JavaScript
CO5: Appraise xml and XSL

BBA

Programme specific outcomes:

PSO1: Understand the importance of teamwork and group dynamics in achieving organizational goals and demonstrate ability to work effectively as a team.
PSO2: Analyze the dynamics of the organizational conflict, various leadership styles and their execution.
PSO3: Think critically of diverse global perspectives and challenges of global business.
PSO4: Apply the knowledge of entrepreneurship, finance, marketing, HR, and computer-based information systems to business operations.

Course Outcomes

Fundamentals of Information Technology

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CO1: Understand basic computer terminology and number systems.
CO2: Identify different operating systems, and its types.
CO3: Classify different applications of information technology
CO4: Analyse the importance of system development and the phases of SDLC
CO5: Categorize modern means of communications, types of networks and topologies.

Banking Theory & Practice

CO1: Identify and illustrate the origin and growth of banking in India
CO2: Demonstrate and apply the steps involved in opening various types of bank accounts
CO3: Appraise and criticize the various types of collateral securities and point out the precautions to be taken by a banker while advancing loans against different types of securities
CO4: Understand the functions and organizational structure of cooperative banks, Nabard and RBI.
CO5: Interpret the features of various types of negotiable instruments.

Financial Accounting-I

CO1: Describe the need and importance of accounting.
CO2: Explain about subdivision of journal
CO3: Compare the cashbook and passbook balances to reconcile the difference.
CO4: Analyze the financial position of an organization
CO5: Identify the mistakes in books of accounts and helps in correcting them.

Principles of Management

CO1: Identify and interpret the various principles and importance of management
CO2: Explain and demonstrate the uses of planning and organizing
CO3: Classify and combine the various techniques of control and coordination.
CO4: Identify the essence of motivation and direction
CO5: Interrelate and understand the essence of leadership and the importance of communication

Fundamentals of Business Statistics

CO1: Organize, manage and present data. Can represent the statistical data in diagrammatic and graphical form
CO2: Calculate measures of central tendency.
CO3: Analyze the data using measures of dispersion.
CO4: Evaluate the nature for the statistical data using skewness and moments.
CO5: Determine the relation between any two factors using the concepts of correlation and regression analysis

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Corporate Governance & Business Ethics

CO1: Identify and explain the importance of values and ethics.
CO2: Analyze and interpret the various theories of ethical value system.
CO3: Point out the relationship between law and ethics and understand the impact of law on the business.
CO4: Explain the corporate governance codes, transparency and disclosure in the corporate.
CO5: Identify and point out the global issues of governance.

Financial Accounting-II

CO1: Explain the basic concepts of partnership and explain the admission of a partner.
CO2: Demonstrate the accounting treatment relating to retirement and death of a partner.
CO3: Identify the rules applicable for winding up of partnership and insolvency of a partner.
CO4: Show the method of finding out profits and financial position by using incomplete records.
CO5: Illustrate method of preparing books under hire purchase and instalment purchase system

Managerial Economics

CO1: Understand the basic terms and concepts used in the managerial economics
CO2: Appraise the behaviour of consumers through the demand and indifference analysis
CO3: Interpret the behaviour of producer through supply, production and other related concepts.
CO4: Differentiate the market forms and the price and output determination under each type of market.
CO5: Infer the impact of the macro economic factors on the business concerns.

Principles of Management

CO1: Identify and interpret the various principles and importance of management
CO2: Explain and demonstrate the uses of planning and organizing
CO3: Classify and combine the various techniques of control and coordination.
CO4: Identify the essence of motivation and direction
CO5: Interrelate and understand the essence of leadership and the importance of communication

Taxation

CO1: Explain the role, need of tax and give knowledge about taxation system in india.
CO2: Explain various sources of income tax and determines income tax payable on individual salary, income from house property.
CO3: Analyze and prepare over all calculation of tax liability of individual.
CO4: Describe the assessment, role of income tax.
CO5: Describe about indirect tax and role of g.s.t, its meaning, features, history and role.

Fundamentals of Business Mathematics

CO1: Use the quadratic formula to find all real solutions. Compute the discriminant and state the number and type of solutions.

CO2: Perform standard operations with matrices including addition, scalar multiplication, and multiplication. Compute the inverse of a matrix.
CO3: Understand particular types of sequences called arithmetic progression, geometric progression and also find arithmetic mean (a.m), geometric mean (g.m) between two given numbers.
CO4: Understand the idea of differentiation from first principles - differentiate power functions.
CO5: Learn about integration and about some of the common techniques employed to obtain integrals. Interpret distinction between a definite and an indefinite integral.

Research Methodology

CO1: Understand and interpret the basic meaning of research, to define the research problem at hand and construct the procedure for undertaking research.
CO2: Formulate hypothesis and develop an appropriate research design.
CO3: Classify the different sources of data and analyze the various methods of data collection.
CO4: Develop the most appropriate sample size and design as well as determination of sampling and non-sampling errors.
CO5: Classify the various types of attitude measurement scales and applies the principles and format of report writing and presentation.

Advanced Accounting

CO1: State various methods for preparing branch accounts.
CO2: Describe the allocation and interdepartmental transfer of expenses.
CO3: Analyse the financial position of non-trading concerns.
CO4: Evaluate the different situation of capital issue to public issue of shares at par, premium and forfeiture.
CO5: Explain about sources of funds through issue of debentures and various methods of redemption.

Macro Business Environment

CO1: Define and explain process of calculating national income.
CO2: Describe circular flow of income through various sectors of economy.
CO3: Illustrate meaning of inflation and identify different kind of inflation, causes and effects of inflation of different sectors of economy.
CO4: Appraise the importance of planning undertaken by government of India and economic reforms adopted by government.
CO5: Develop understanding towards role of foreign investment in development of Indian industries.

E-Commerce

CO1: Explain electronic commerce framework and www architecture.
CO2: Select mercantile process models and types of electronic payment systems.

CO3: Apply EDI implementations and analyze intra organizational electronic commerce
CO4: Design corporate digital library, advertising and marketing on the internet.
CO5: Identify consumer search and resource discovery, on demand education and digital copy rights.

Corporate Accounting

CO1: Understand the various types of capital structures of the company and their representation in the balance sheet, preparation of financial statements with profits before incorporation.
CO2: Explain the valuation of shares and goodwill.
CO3: Analyse amalgamation in the nature of merger and purchase and accounting treatment for internal reconstruction.
CO4: Demonstrate the accounting systems of a banking company under the guidance of RBI.
CO5: Analyze insurance accounts as per irdai guidelines.

Financial Management

CO1: Interpret the concept of business finance, finance decision and functions of finance manager.
CO2: Understand the concept of cost of capital and leverages and calculate the cost of capital and leverages of a business concern.
CO3: Interpret the concept of capital budget and will be able to apply the techniques of ARR, NPV, IRR, PI etc.
CO4: Understand the concept of working capital management and apply the concept and able to determine working capital requirement of a business organization.
CO5: Interpret the concept of cash management and cash budgeting and receivable management.

Marketing Management

CO1: Explain the concept of marketing and sketches the marketing environment.
CO2: Classify the market and identify the various market segments.
CO3: Point out the marketing mix with reference to product and price.
CO4: Analyze the promotion mix and the channels of distribution.
CO5: Explain service marketing mix and points out the importance of direct and online marketing.

Human Resource Management

CO1: Understand the concept of HRM, functions and changing role of a HR manager
CO2: Distinguish between the various methods of job design and interpret the techniques of acquisition of human resource.

CO3: Explain the importance of HRP and point out the various HRD approaches for work life balance and describe the concept of job evaluation.
CO4: Analyse the core concepts of HRD, TQM and understand the concept of career development.
CO5: Explain the various concepts of worker's participation and quality of work life.

International Business

CO1: Explain the overview of international business and demonstrate the environment of international business.
CO2: Explain about the various forms of trade regulation and integration.
CO3: Sketch the various modes of entering the international market.
CO4: Point out the conceptual framework of e-business and policy framework for global e-business.
CO5: Analyze the intercultural communication on the global perspective.

Leadership & Change Management

CO1: Recognize the qualities of a leader, analyze various leadership theories and illustrate the different leadership styles.
CO2: Analyze the forces of change and interpret the techniques of change management.
CO3: Classify the various types of organizational change.
CO4: Point out the reasons for resistance to organizational change and recognize the methods of overcoming resistance.
CO5: Develop the most suitable plan for successful implementation and organization of change in an organization.

Quantitative Techniques

CO1: Understand the characteristics of different types of decision-making environments and the appropriate decision making approaches and tools to be used in each type.
CO2: Build and solve transportation models. Analyze the cases of unequal supply and demand, unacceptable routes, and maximization objective for a transportation problem.
CO3: Understand the mathematical tools that are needed to solve optimization problems, and be familiar with the special features of the trans-shipment problem.
CO4: Design new simple models, like: CPM, pert to improve decision –making and develop critical thinking and objective analysis of decision problems
CO5: Understand the terminology & amp; nomenclature appropriate queuing theory, and demonstrate the knowledge of various queuing models.

Cost Accounting

CO1: Understand importance of cost accounting in organization.
CO2: Apply the principles of managing inventories of materials and the procedures for accounting inventory.
CO3: Apply the principles and practice of costing labour to a business.
CO4: Apply the principles and process of overhead cost analysis.

CO5: Apply the operation of unit or output costing and process costing methods.

Business Laws

CO1: Demonstrate an understanding of the legal environment of the business.
CO2: Explain legality of object and consideration, discharge of a contract and remedies available.
CO3: Identify the recognition of transactions involving the sales of goods act.
CO4: Dramatize the application of consumer protection act.
CO5: Recognize intellectual property rights and introduction to it act 2000 and right to information act.

Strategic Management

CO1: Explain the strategic management process and craft strategies.
Co2. Analyse the components of environment analysis in depth.
Co3. Formulate the various corporate strategies.
Co4. Plan and produce strategies tailoring to fit specific industry.
Co5. Explain the various issues and importance of strategic leadership.

Financial Markets & Institutions

CO1: Explain and analyze the various functions and importance of indian financial system
CO2: Classify capital markets and assess the rational content and current reforms to capital market regulations
CO3: Analyze the features of money market and list out the various money market instruments
CO4: Identify and interpret the various services provided by a merchant banker
CO5: Explain the meaning, origin, and types of funds

Retail Marketing & Customer Relationship Management

CO1: Understand the important concepts of retailing.
CO2: Sketch the importance of merchandise management and phases in merchandise planning.
CO3: Explain the concept of human resource management in retailing
CO4: Explain and understand the approaches to develop customer service.
CO5: Analyse the various steps involved in crm process.

Entrepreneurship Development

CO1: Understand the nature and basic concepts of entrepreneur and entrepreneurship
CO2: Demonstrate the knowledge of entrepreneurship development programmes
CO3: Recognize the need for project report and analyze the concepts of project formulation
CO4: Interpret factory design and factory layout and identify the importance of standardization

and quality control.

CO5: Differentiate small and large scale industries and identify the reasons for sickness of small scale industries.

Management Accounting

CO1: Explain an overview of management accounting, its need, scope and functions.
CO2: Prepare the financial statements and show its analysis and interpretation and apply different formula in ratio analysis.
CO3: Illustrate the preparation of funds flow statement and cash flow statement.
CO4: Explain marginal costing and budgetary techniques
CO5: Understand importance of standard costing and analyze variance analysis

Company Law

CO1: Develop basic knowledge of provisions of companies' act 2013.
CO2: Describe the capital structure of company through issues of shares and alteration of share capital.
CO3: Explain the borrowing powers of a company and consequences of ultra vires borrowing.
CO4: State various provisions of the companies act relating to company management and meetings.
CO5: Identify various modes of winding up and legal provisions applicable.

International Accounting and Finance

Programme Specific Outcomes:

Students will be able to:

PSO1: Understand the nature and basic concepts of International Accounting & Finance and express them effectively in the provisions according to the International Financial Reporting Standards.
PSO2: Ability to apply and analyze the provisions in application of through and fare views of auditing and accounting to check the true and fair accounting to be maintained
PSO3: Think critically to integrate knowledge, skill and attitude that will sustain an environment of learning and creativity among the students.
PSO4: Apply and appreciate the benefits of experiential learning by displaying good work habits, time management and self-discipline.
PSO5: Interpret and develop the students ability to clear all the Fundamental and professional level papers of ACCA.

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Accountant in Business

CO1: To make the students understand the structure of business organizations.
CO2: To explain the accounting and reporting systems and their relationship with other business functions.
CO3: To point out the importance of leadership & motivation theories.
CO4: To explain the importance of communication in business.
CO5: To analyze the professional ethics in accounting & business.

Financial Accounting

CO1: Describe the regulatory framework of ifrs.
CO2: Understand the various accounting standards and their applications.
CO3: Apply the provisions of accounting standards to various concepts.
CO4: Analyze the financial position of an organization
CO5: Evaluate the profitability position of a company in terms of ratios

Cost Accounting –I

CO1: To understand the role of management information in planning, controlling and decision making
CO2: To describe the principles of managing inventories of materials and the procedures for accounting for inventory
CO3: To describe the principles and practice of costing labour to a business
CO4: To describe principles and processes of overhead cost analysis
CO5: To understand the implications of marginal costing in contrast to absorption costing for management information

Taxation- I

CO1: To describe the basic terminology of Indian taxation system.
CO2: To differentiate the allowances as fully taxable, partly taxable, not taxable, and computation of income from salary
CO3: To explain the valuation of income from house property.
CO4: To apply the provisions relating to income from business and profession
CO5: To evaluate the computation of capital gain LTCG and STCG

Business Laws

CO1: Demonstrate an understanding of the legal environment of the business.
CO2: Explains legality of object and consideration, discharge of a contract and remedies available.
CO3: Identify the recognition of transactions involving the sales of goods act.
CO4: Dramatize the application of consumer protection act.
CO5: To recognize intellectual property rights and introduction to it act 2000 and right to information act.

Cost Accounting –II

CO1: To apply the operation of process costing methods
CO2: To prepare budgets for an organization and apply the statistical techniques in cost and

management accounting
CO3: To identify the methods for assessing the viability of capital investments
CO4: To produce operating statements using basic standards and variances
CO5: To understand the scope of performance measurement and performance indicators

Taxation-II
CO1: To describe the basic concept of income from securities and income from other sources
CO2: To differentiate the provisions relating to set off and carry forward of losses
CO3: To explain the procedures of deductions and gross total income and tax liability
CO4: To apply operations of assessing officer, assessment and types of assessments and filing of returns
CO5: To evaluate the computation of GST on goods and services

Financial Reporting
CO1: To organize the international financial reporting standards
CO2: To classify accounting for transactions
CO3: To analyze the interpretation of financial statements
CO4: To prepare financial statements
CO5: To prepare consolidated financial statements

Management Accounting Techniques – I
CO1: Understand the modern management accounting techniques.
CO2: Application of specialist cost techniques in management accounting.
CO3: Understanding emerging decision making techniques of management accounting.
CO4: Application of emerging decision making techniques in management accounting.
CO5: To implement the budgetary control strategies in management accounting

Advanced Accounting
CO1: States various methods for preparing branch accounts.
CO2: Describes the allocation and interdepartmental transfer of expenses.
CO3: Analyses the financial position of non-trading concerns.
CO4: Evaluate the different situation of capital issue to public issue of shares at par, premium and forfeiture.
CO5: Explains about sources of funds through issue of debentures and various methods of redemption.

Fundamentals of Information Technology
CO1: Students will be able to explain about computer.
CO2: They will get identify different types of operating systems
CO3: Students will be able to analyze usage of computers in commercial, scientific and entertainment
CO4: Students will be able to classify types of software's
CO5: Students will be able to choose network service and usage

Financial Management

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CO1: To explain the nature and purpose of financial management and discuss the impact of macroeconomic policy
CO2: To identify the nature and role of capital markets both nationally and internationally
CO3: To analyze basic investment appraisal techniques and working capital management
CO4: To suggest appropriate sources of finance for a business and valuing the businesses and financial assets
CO5: To compare and evaluate the methods of foreign currency risk management

Corporate Accounting

CO1: To understand the various types of capital structures of the company and their representation in the balance sheet, preparation of financial statements with profits before incorporation.
CO2: Explains the valuation of shares and goodwill.
CO3: Analyses amalgamation in the nature of merger and purchase and accounting treatment for internal reconstruction.
CO4: Demonstrates the accounting systems of a banking company under the guidance of rbi.
CO5: Helps to prepare insurance accounts as per IRDAI guidelines.

Management Accounting Techniques – II

CO1: To illustrate quantitative analysis in budgeting & learning curve effect.
CO2: To apply the formulae of advanced variances in standard costing.
CO3: To explain performance analysis & behavioural aspects in management.
CO4: To point out the performance management information systems & importance of management reports.
CO5: To evaluate transfer pricing & performance analysis in private sector & in not for profit organizations.

Business Statistics

CO1: Students will be able to know basic statistical concepts for collection, organization and its limitations. They will also be able to determine the considerations and options for designing a sample.
CO2: Students will be able to represent the statistical data in diagrammatic and graphical form.
CO3: Students will be able to measures of central tendency, dispersion and symmetrical nature for the given data.
CO4: Students will be able to analyze the relation between any two factors using the concepts of moments, skewness, and correlation and regression analysis.
CO5: Students will be able to predict the future events and/or estimating unobservable components like trend and seasonal effects by using the concepts of time series analysis. They will also be able to determination of the value of money using price index numbers and displays the change in price levels and depicts inflation or deflation.

Entrepreneurial Development

CO1: Understand the nature and basic concept of entrepreneur and entrepreneurship.
CO2: To analyze the idea generation and assessment process.
CO3: Recognise the need for project report and analyze the concepts of project formulation

and differentiate small and large scale industries and identify the reasons for sickness of small scale industries

CO4: Demonstrate the knowledge of entrepreneurship development programmes

CO5: To identify and explain the importance of values and ethics

Auditing and Assurance

CO1: To explain the audit and assurance

CO2: To organize the audit planning and control

CO3: To interpret the performance analysis

CO4: To identify the evidence

CO5: To describe review and reporting

Marketing Management

CO1: Explains the concept of marketing and sketches the marketing environment.

CO2: Classifies the market and identifies the various market segments

CO3: Point outs the marketing mix with reference to product and price

CO4: Analyzes the promotion mix and the channels of distribution.

CO5: Explains service marketing mix and points out the importance of direct and online marketing.

Research Methodology

CO1: To understand and interpret the basic meaning of research, to define the research problem at hand and construct the procedure for undertaking research.

CO2: To formulate hypothesis and develop an appropriate research design.

CO3: To classify the different sources of data and analyze the various methods of data collection.

CO4: To develop the most appropriate sample size and design as well as determination of sampling and non-sampling errors.

CO5: To classify the various types of attitude measurement scales and applies the principles and format of report writing and presentation.

Performance Management- I

CO1: To describe the strategic planning and control

CO2: To analyze the external influences on performance

CO3: To organize the performance measurement systems and design

CO4: To describe strategic performance measurement-I

CO5: To classify strategic performance measurement-II

Human Resource Management

CO1: To understand the concept of HRM, functions and changing role of a HR manager

CO2: To distinguish between the various methods of job design and interpret the techniques of acquisition of human resource.

CO3: To explain the importance of HRP and point out the various hrd approaches for work life balance and describe the concept of job evaluation.
CO4: To analyze the core concepts of HRD, TQM and understand the concept of career development.
CO5: To explain the various concepts of worker's participation and quality of work life.

Advanced Auditing and Assurance

CO1: To explain the audit and assurance
CO2: To organize the audit planning and control
CO3: To interpret the performance analysis
CO4: To identify the evidence

CO5: To describe review and reporting

Performance Management- II

CO1: To explain the performance evaluation
CO2: To organize the performance measurement and control.
CO3: To interpret the performance analysis
CO4: To identify the current developments
CO5: To defend recent trends in performance management

International Business

CO1: Explains the overview of international business and demonstrates the environment of international business.
CO2: Explains about the various forms of trade regulation and integration.
CO3: Sketches the various modes of entering the international market.
CO4: It point out the conceptual framework of e-business and policy framework for global e-business.
CO5: It analyzes the intercultural communication on the global perspective.

Corporate Governance and Ethics

CO1: To analyze and interpret the various moral stances required for corporate governance.
CO2: To identify and explain the roles and responsibilities of directors and board committees.
CO3: To demonstrate how risk is identified and assessed.
CO4: To explain the various risk management strategies.
CO5: To recognize the need and importance of business ethics and values

E-Commerce

CO1: Explain electronic commerce framework and www architecture
CO2: Select mercantile process models and types of electronic payment systems.
CO3: Apply EDI implementations and analyze intra organizational electronic commerce
CO4: Choose advertising and marketing on the internet.

CO5: Identify consumer search and resource discovery, on demand education and digital copy rights

Corporate Reporting

CO1: To organize the international financial reporting standards

CO2: To classify accounting for transactions

CO3: To prepare financial statements

CO4: To prepare financial statements

CO5: To analyze current issues

B.A. Mass Communication

Programme Outcomes

PO1: Critical Thinking: Take informed actions after identifying the assumptions that frame our thinking and actions, critically evaluate. The validity of arguments and conclusion, and looking at our ideas and decisions (intellectual, organizational, and personal)From Different perspectives.

PO2: **Effective Communication**: Speak, read, write and listen clearly in person and through electronic media in English and in one Indian Language, and make meaning of the word by connecting people, ideas, books, media, and technology.

PO3: **Social Interaction**: Elicit views of others, mediate disagreements and help reach conclusions in group settings.

PO4: **Conduct Investigation of Complex Problems**: Use research based knowledge and research methods including design of experiments, Analysis and interpretation of data, and synthesis of information to provide valid conclusion

PO5: Effective Citizenship: Demonstrate empathetic social concern and equity centered national development, and the ability to act with an informed awareness of issues and participate in civil life through a volunteering.

PO6: Ethics: Recognize different value systems including your own, understand the moral dimensions of your decisions, and accept responsibility for them.

PO7: Environment and Sustainability: Understand the issues of environmental contexts and sustainable development.

PO8: Self-Directed and Lifelong Learning: Acquire the ability to engage in independent and lifelong learning in the broadest manual**.**

Programme Specific Outcomes:

PSO1: Understand the nature and basic concepts of Mass Communication and express them effectively in writing, speaking and audio-visual medium.

PSO2: Analyze the relationship between media and society, and the various ways individuals respond to socio-political-religious-cultural-ethical -economic and sustainable goals.

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PSO3: Think critically about debut, films, documentaries, articles, editorials and music while taking into account diverse interpretations from different viewpoints. Being exposed to wide range of perspective the students gain the ability to construct a public opinion which is socially responsible, ethical and humane leading to effective citizenship.
PSO4: Apply the theories of Mass Communication to understand complex problems of society and create a content, catering to the needs of pluralistic society.
PSO5: Designing creative content that suits for various media platform.

Introduction to Mass Communication

CO1: Students understand what's human communication, it's types and how communication differs in various levels
CO2: Students understand the characteristics, nature and scope of journalism and mass communication
CO3: Students apply different communication models to help communicate messages and understand the audience.
CO4: Students analyze by applying various theories used in mass communication and understand audience behavior and reactions, hence, giving an insight in Indian Media.
CO5: Students understand how traditional media and various folk forms help people communicate to the audience.

Introduction to Socio- Political India:

CO1: Students understand the current social, economic and cultural conditions and problems of India
CO2: Students understand the Indian political system, Panchayat Raj and the understanding of the Indian Constitution.
CO3: Students understand the various statuses of different sectors of Indian societies and the schemes involved to alleviate them.
CO4: Students apply the concepts of human rights in India and how it is implemented by various organizations.
CO5: Students understand Globalization, its impact and the crisis agriculture society which also includes the civil movements involved.

Digital Audio Production

CO1: Students design sound by using these components of sound.
CO2: Students understand the history of recording and format. They learn the use of RTA software.
CO3: Students understand the importance of the sound equipment in sound designing.
CO4: Students apply the concepts of sound production while designing the sound.
CO5: Students learn the process of sound mixing.

Indian Print Journalism:

CO1: Students analyze the working of the press in India and it's changing landscape globally.
CO2: Students understand the working of press from the past and various pioneers involved in the evolution of Press in India.
CO3: Students evaluate the working of regional press from the past and various pioneers

involved in the evolution of Regional Press in India.

CO4: Students understand the coverage of People's movement by Indian Press and their representation.

CO5: Students remember the impact of globalization on the press and Emergence of social media as the 5th estate in democracy.

Introduction to Electronic Media

CO1: Students understand the origin and growth of Indian radio and All India Radio.

CO2: Students understand the status of radio in the era of TV and New media and its new trends.

CO3: Students understand the origin and growth of TV in India and various projects related to its' growth.

CO4: Students understand the growth and new trends of TV after the separation of DD from AIR and the Prasar Bharathi Act.

CO5: Students remember the introduction of cable TV, STAR and ZEE network and the new trends in TV.

Digital Photography

CO1: Students understand the origin and history of Photography and the various Camera components.

CO2: Students apply the Types of cameras, lenses and the rules of Photography

CO3: Students create photographs with the usage of lights and flash.

CO4: Students understand the various types of Photography in Media.

CO5: Students analyze the post- production process of Photography using software's and it's digital storage formats

Photography

CO1: Students understand the evolution of photography and the basic terms involved in photography.

CO2: Students analyze the functions of the parts of a camera and usage of different types of cameras.

CO3: Students learn and apply the composition of shots and importance of lighting and it's techniques in photography.

CO4: Students evaluate the editing software techniques and usage of apt storage devices.

CO5: Students apply techniques involved in various forms of photography in the current market.

Film Appreciation

CO1: Students understand and describe the importance of films in the society and the evolution of cinema from the past.

CO2: Students understand the rules of film and the art of making aesthetic cinema.

CO3: Students analyze the techniques involved in making effective films.

CO4: Students create films through these elements of film.

CO5: Students understand about world-wide cinema and different genres of films.

Media, Culture And Society

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CO1: Students understand the nature and scope of media and learn about different theories involved in consuming media messages.
CO2: Students understand the media and the psychological effects of media content on the society.
CO3: Students evaluate the impact of media on an individual and society and why people use media.
CO4: Students analyze culture, its ideology and pop-culture.
CO5: Students understand the unconventional forms of media in modern society.

History Of Indian Journalism

CO1: Students understand the press and its role and its evolution through the years.
CO2: Students remember in detail about the history of press and its contribution in the nationalist movement.
CO3: Students understand the introduction of local press and newspapers in different regional languages.
CO4: Students understand the role of press in society through various movements.
CO5: Students understand the trends that evolved in press.

Elements Of Film

CO1: Students understand the concept of film and Indian Cinema
CO2: Students analyze the process of film production and the stages involved in it.
CO3: Students analyze the technical and visual aspects of film making.
CO4: Students understand the evolution of films through historic movements and films.
CO5: Students understand the concepts and types of documentary.

Television Production

CO1: Students understand the types of television and structure of a television studio.
CO2: Students apply the scripting techniques for television production.
CO3: Students analyze the technical functioning of camera and its parts.
CO4: Students analyze the basic editing and lighting techniques.
CO5: Students understand the role of Director and Producer

Reporting And Editing

CO1: Students apply the basics of reporting and the qualities of a reporter and the privileges given to reporters.
CO2: Students apply the news elements and sources, different formats of news writing and types of lead.
CO3: Students understand the different tools of news gathering, interviews, principles of editing and style sheet.
CO4: Students apply the principles and techniques of writing headlines and editorials and their types.
CO5: Students analyze the importance of newspaper design and layout, page makeup, caption and cutline.

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Film Studies

CO1: Students understand the history of cinema, evolution of narratives, film language and classic Hollywood narratives, and the discovery of shot.
CO2: Students understand about classic and modern Hollywood cinema and Japanese cinema.
CO3: Students understand about French new wave, Italian neo-realism and Indian art cinema.
CO4: Students apply the film theory and criticism, cinema and storytelling, cinematic codes, cinematography and editing.
CO5: Students understand the genre and form of Indian cinema, song and dance sequences, films on social issues and censorship.

Digital Film Making

CO1: Students understand different film movements, development of classical Indian and Hollywood cinema and Origin of classical narrative.
CO2: Students analyze the aspects and process of pre-production in film making
CO3: Students analyze the production process, role of director, understand cinematography and work with sound.
CO4: Students apply basic methodology and grammar of editing and use of visual effects
CO5: Students understand Film distribution, marketing and the film market

Advertising

CO1: Students understand the nature and scope of advertising and its role in society
CO2: Students understand the evolution and role of advertising in PR.
CO3: Students analyze the advertising in various forms of media
CO4: Students apply advertising in the concept of marketing and media planning
CO5: Students analyze the various aspects and stages of advertising

Media Laws And Ethics

CO1: Students understand the various laws and features of Indian Constitution and its implications in the societal norms.
CO2: Students understand the laws related to the Press; rights, liabilities and limitations in Indian context
CO3: Students apply the special privileges of Indian Parliament; the rights and legalities in Indian context with regard to the Press.
CO4: Students understand the significance of various mass media Acts; its implications to the Press freedom and the legalities associated with it with a Journalistic approach.
CO5: Students analyze the legalities with respect to the two Press Commissions in India and its implications on Print and Electronic Media.

Development Communication

CO1: Students understand the basis of Development Communication and its importance for the development of the backward societies.
CO2: Students understand the socio-economic prospects and decentralization patterns for the betterment of underdeveloped nations through mass Media.

CO3: Students analyze the importance of implementing rural development strategies for the community development in Rural India.
CO4: Students evaluate the conceptual patterns of Development Support Communication and also to inculcate the Participatory communication process.
CO5: Students analyze the ongoing issues of rural origins and it allows implementing the awareness strategies and problem oriented approaches through the usage of Mass media.

Mass Media Research

CO1: Students understand the genesis of conducting a Scientific Research in the field of Mass Media.
CO2: Students apply the Methodologies of the Scientific Research to conduct their research intending on the specified subject matter.
CO3: Students analyze various methods of Qualitative Research in order to find out the research findings of the specific subject matter.
CO4: Students analyze various methods of Quantitative Research in order to find out the research findings of the specific subject matter.
CO5: Students evaluate various underlying theories of Mass media in order to understand the effects of the desired outcomes of the subjective research outcomes.

Media Management

CO1: Students understand the conceptual patterns of mass media organizations and its underlying trends of media management and ownership prospects.
CO2: Students apply them to strategically approach in the Print media.
CO3: Students analyze a broader picture of the management process of Film Industry and also to understand the transitional shifts in the field of Cinema.
CO4: Students evaluate by decoding the changing trends in the Broadcast media.
CO5: Students understand the broader perspective on various Government regulatory mechanisms and policies.

New Media Studies

CO1: Students understand the conceding factors of Digitalization and its implications.
CO2: Students apply the Digital Media Trends as a medium of mass media and also make them understand the utilization of CMC in the various new Media entities.
CO3: Students analyze the conceptualized patterns of new media entities and its connection to the real life events.
CO4: Students understand the complexities of aspects such as Online Relationships, Virtual and Impersonal complexities of the Digital communication trends.
CO5: Students understand the theoretical frameworks and conceptualized patterns of New Media Effects and legalities

Online Journalism

CO1: Students understand the Journalistic approaches through new media entities
CO2: Students apply the salient features of Online Journalism which helps them to communicate the intended information through the resources available in this field.
CO3: Students create the underlying concepts of Participatory communication via multimedia approaches of Online Journalism
CO4: Students create and utilize the sources of Online Journalistic approaches through the

means of Social Networking platforms.

CO5: Students analyze the laws and ethics of Digital Media Trends.

Radio Production

CO1: Students understand the conceptual process of Radio Production.
CO2: Students evaluate the complexities of Radio Production as a means of mass communication.
CO3: Students create the Radio scripts and other practical implications of the radio production.
CO4: Students evaluate the complexities of the Radio Broadcasting in detail.
CO5: Students create Radio News Report and also the Radio feature reporting.

Public Relations

CO1: Students understand the theoretical knowledge of the conceptual patterns of PR as a tool of mass communication and also apply PR as a Management function.
CO2: Students apply the principles of PR as a process of mass communication and also helps them to achieve the interrelationships with the clients.
CO3: Students apply the Organizational structure of Public Relations and also to learn about the process of Public Relations under different occasions of marketing.
CO4: Students analyze the complexities of Public Relations and its 3 tier systems. They also create the practical knowledge to build the positive relationships with the PR Agencies and clients.
CO5: Students create an Event through PR as a tool of management communication and also to engage the intended target audience.

B.Sc. Multimedia & Animation

Programme Specific Outcomes:

PSO1: Identify and memorize the concepts of (2d/3d) pipeline for preproduction, production & post production.
PSO2: Recognize the principles of visual art& design, advertising, gaming, theatre arts& its elements with illustration, perspective & composition.
PSO3: Identify user interface of Autodesk Maya, adobe compositing, web design and ad word.
PSO4: Apply the elements of visual language of dots, lines, shapes, forms, contour & texture for preproduction of animation films & game designing concepts.
PSO5: Analyse, Distinguish & identify the figurative reading of picturesque relationship among elements like perception, verbalization & creativity.
PSO6: Apply the software skills of Maya for the production, compositing and editing for post production of demo reels.
PSO7: Develop creative thinking while producing different animation films required for

production houses.

PSO8: Develop the behaviour & consequences in media & employee relationships.

Indian Heritage and Culture

CO1: This unit makes the student to *understand* better about the origin of ancient Indian culture the contributions of great rulers from both north and south India for Indian culture in ancient days.

CO2: Students will *Analyse* how Persian culture entered into India and it influence the Fine Arts of Indian society like Classical Music, Dance and Architecture.

CO3: Student is able to *assess* how the Indian orthodox society turn into modern and western society in the 19th century .It also edifies the students with spiritual doctrines of various religions.

CO4: Students will *Evaluat*e various challenges face by the youth and the evils effects of terrorism on society

CO5: The topics in the unit Create belongingness among the students by bringing awareness of the rights and duties to make the world a better place and it throw light on gender sensitization issues of women, Children and LGBT.

Principles of Visual Design

CO1: Recognise the principles of Visual Design

CO2: Tell the importance of visual language in daily life

CO3: Apply, organize, sketch& paint using the elements of visual language of Dots, Lines, and Shapes, Forms, Contour& texture.

CO4: Analyse, distinguish identify the figurative reading of picturesque relationship among elements like perception, verbalization& creativity.

CO5: Compare visual building by exaggeration, distortion, stylization & abstraction

Graphic Designing

CO1: Memorize & recognizes, History, Generations, introduction to Hardware and software.

CO2: Analyze & compare raster graphic, vector graphic.

CO3: Apply the Photoshop software for editing images, doing 2Danimation.

CO4: Students will also be able to understand

CO5: Apply the software Illustrator to blend shapes, colors, text & transforming objects.

Basic Concepts of Arts

CO1: Describe, define & recognize the Variety of art media & Art careers.

CO2: Explain and interrelate the different modes of art.

CO3: Describe & memorize the evolution and history of art.

CO4: Demonstrating of artist's knowledge, art style and movement.

CO5: Judge, criticize Visual Art and compare fine arts and commercial art.

Programming Through 'C'

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CO1: Memorize & recognize the basic C program, work flow and Compiling a C programme.
CO2: Explain the different types of variables, data types, output formats.
CO3: Show how conditional statements work.
CO4: Analyse Array Basics & functions in C language.
CO5: Compose Random numbers, strand fractions, using strings in a programme.

Introduction to Animation

CO1: Identify the history of Animation
CO2: Compare the Traditional and Computer generated Animation.
CO3: Compare in which way the 2D, 3D Animation pipe line works.
CO4: Describes the History of Disney &Pixar Animation studios.
CO5: Creates advance flip card animation, building models, and lighting.

Camera Techniques

CO1: Describe early experiments in photography, history of camera.
CO2: Categorize various types of lens & characteristics of lens, focal length etc.
CO3: Generalize the importance of light, properties of light &basic lighting techniques.
CO4: Explain colour theory, colour psychology, camera angles and movements.
CO5: Demonstrate video camera operation.

Concept Development

CO1: Identify, list & memorize basic story of idea & organize ideas into concepts.
CO2: Explains, differentiates & distinguish about narrative structure & Case study of Animation Films.
CO3: Define & explain the Visual elements in concept development.
CO4: Demonstrate, distinguish & explain about Illustration, Perspective & Composition.
CO5: Define, Classify & explains, the Framing, Movement and Meaning

Web Design

CO1: Define & identify the user interface for web design.
CO2: Explain basic tags &advanced tags, elements, heading, linc forms, images,tables,formats,frame settings etc.
CO3: Design front page, layout design, background etc. using Photoshop.
CO4: Design banners, animation, twining types, button creation, linking text type's etc. using flash.
CO5: Develop the technical skills to create the site with link page, image importing HTML conversion.

Creative Arts

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CO1: Recognize the principles of Visual Design
CO2: Tell the importance of visual language in daily life.
CO3: Apply, organize, sketch& paint using the elements of visual language of Dots, Lines, and Shapes, Forms, Contour& texture.
CO4: Analyse, distinguish identify the figurative reading of picturesque relationship among elements like perception, verbalization& creativity.
CO5: Compare visual building byexaggeration, distortion, stylization & abstraction.

Introduction to Maya

CO1: Recognize narrative elements & elements of script format.
CO2: Explain the content, plane of discourse, point of View etc.
CO3: Identify narrative functions & means of expression on plane of discourse &event.
CO4: Differentiate narrative fiction and documentary, narrative approach image and sound.
CO5: Appraise the narrative efficiency & richness with the use of metonym & metaphor.

Narrative Techniques

CO1: Recognize narrative elements & elements of script format.
CO2: Explain the content, plane of discourse, point of View etc.
CO3: Identify narrative functions & means of expression on plane of discourse &event.
CO4: Differentiate narrative fiction and documentary, narrative approach image and sound.
CO5: Appraise the narrative efficiency & richness with the use of metonym & metaphor.

Media Education

CO1: Describe Media, new media literacy, media message.
CO2: Recognize community, society, democracy and there role in media.
CO3: Generalize the thinking about behaviour & consequences in media.
CO4: Analyse the thinking about the health issues (tobacco, alcohol & drugs) portrayed by media.
CO5: Develop teaching methodologies of project based learning as projected by media.

Environmental Studies & Gender Sensitization

CO1: **Understand** the importance of Environmental education, conservation of natural resources & understand the importance of ecosystems and biodiversity.
CO2: **Understand** the pollution problems and apply the environmental science knowledge on solid waste management, disaster management.
CO3: **Apply** the environmental science knowledge to improve the resources and Evaluate and understand the sustainable environmental conditions and control methods.
CO4: **Identify** the interactions and intersections of identities (e.g., gender, race, ethnicity, class, sexuality, and so on) and assess the ways in which they contribute to instances of privilege and power dynamics across cultures, space, and time. And their problems.
CO5: **Understand** the gender problems and ways of addressing them, including interactions

across local to global scales in communities and overcome inequalities with legislations**.**

Video Editing (Premier & Sound Forge)

CO1: Describe the Historical development of editing.
CO2: Explain stages of editing, selection of shots, assembly & fine cut, principles of continuity editing.
CO3: Create basic transitions like cut, dissolve, fade in, fade out, and intercut, cross cut, jump cut.
CO4: Do the titles and credits using linear, on linear, offline, online editing through final cut pro and avid.
CO5: Do the sound editing using nonlinear editing techniques, capturing & importing footage.

Visual Aesthetics and Analysis

CO1: Define & describes Visual message and meanings different perceptions of visual messages.
CO2: Classify, explain& interpret the Navarrete theories and principles of Art.
CO3: Explain & defend the major art movement in India and in the Western countries.
CO4: Analyse & compare Signs codes, connotations, image, semiotic, syntagmatic and paradigmatic approach.
CO5: Compare, criticize & judge the Gender issues along the Psychoanalytic & Feministic approach.

Introduction to Advertising

CO1: Describe evolution of advertising in India & World. Define advertising meaning, objective, need & role.
CO2: Classify the different types of advertising media, product, and service, institutional/corporate, PSA, financial, global industrial.
CO3: Compare AAAI, ASCI, IMRB, ABC, NRS, TRP, Pre-test and post- test methods, digital media, communication technology.
CO4: Identify creativity in advertising, needs of research in advertising.
CO5: Appraise Copy right Act, National symbols and emblems act, Ambiguous advertising, Vulgarity in advertising, Ethics and Codes of advertising

Introduction to Gaming

CO1: Identify History of Gaming industry, introduction to different types of consoles/platforms.
CO2: Explain the Design document, types of design document, Game play mechanics, platforms and its limitations.
CO3: Differentiate isometric view, side scrolling and open world games, types of game generes.VR, AR and MR.
CO4: Interpret Maya LT & Unity 3D basic user interface, role of lighting & VFX for gaming
CO5: Explain spine animation, sprite sheet, texture atlas, openGI.

Compositing (After Effects)

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CO1: Identify user interface for compositing , Views and Previews, Layers and Properties & Animation, Colours, Masks, Transparency and Keying, Text, Drawing and Painting, Motion Tracking, Effects and Animation, Pre-sets, Rendering and Exporting.
CO2: Differentiate Image Based Motion Graphics & Video Based Motion Graphics
CO3: Create Effects & Title effects.
CO4: Do colour correction & Keying after effects tools.
CO5: Use Match mover, Motion tracking Overview, Motion Tracking, Workflow and Controls, Rotoscoping , Wire Removal.

Digital Advertising

CO1: Identify Digital advertising Fundamentals, Ad Words User Interface, and Strategic flow for Ad activities.
CO2: Explain Facebook advertising Fundamentals. Profiles and pages, business categories, getting assets ready. Creating Facebook pages, Page info and settings. Pin post and highlights, Scheduling posts. Facebook events, Reply and messages, Facebook insights reports.
CO3: Explain Video Flow, Google Pages for YouTube Channel. Channel ART, Channel Links, Channel Keywords. Branding Watermark.
CO4: Produce Videos for YouTube with the knowledge of Camera Angles, Setting up Lightings, Shooting Techniques.Editing Videos, Editing Audio, Background Music.White Board Animation, Publishing HD Videos
CO5: Creating Animated Contents, Designing Image Ads.Creating Animated Ads, Examples on Animated Ads, Creating Video Ads.Hi-Jack Competitor's Video Audience Practical Examples.

Corporate Communication

CO1: Describe Concept, Definition, Nature, Scope Functions of PR Role of PR, Historical perspective of PR, Corporate Communication and Publicity, Propaganda, Advertising and Lobbying.
CO2: Explain Corporate Communication Publics; Internal and External, Corporate communication Process; Four stages of Corporate Communication Corporate Communication Consultancy and Counselling.
CO3: Explain Tools of Corporate Communication; House Journals, Press Release, Press Conference, Planned Tours, Brochures, Posters, Open House Exhibitions, Audio-visual Aid, TV, Film, Radio, Video and Demonstrations
CO4: Apply Corporate Communication and Management, Employee Relations, Financial Relations, Consumer Relations Media Relations, Corporate Communication in Crisis Management, Case Studies
CO5: Evaluate Corporate Communication Programs, Event Management Process & Techniques, Broadcasting; Genesis and Growth of media units in Central Govt. Corporate Communication Research.

Digital Painting

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CO1: Describe Digital painting. Photoshop Basics with Workspace using Photoshop and Photoshop Vector Tools.
CO2: Explain Role of colour in digital painting and colour theory. Create an original vehicle concept Drawing utilizing the techniques learned in the previous exercises
CO3: Explain Advanced Painting Techniques. Creating the illusion of volume and space with light and shadow.
CO4: Paint Digitally a Fantasy or Science Fiction City in Perspective.
CO5: Explain blend &shading. Layers, touch up, detail, blending, filters. Custom Brushes for Rock, Metal, Stone Textures, Trees, leaves and Branches.

Production Management

CO1: Explain, express demonstrate the work flow in 2D/3D production houses.
CO2: Shows & interrelate the basic preparation for modelling demo reel.
CO3: Plan how to make a scene for animation.
CO4: Plan how to combine hardware particles for a scene.
CO5: Formulate Dynamic related visual Effects.

Theatre Arts

CO1: Identify Origin and development of Indian Theatre, Theatre Arts, the Elements of Theatre, and History of Theatre Arts & Theatre for personality development.
CO2: Explain Folk Art Working on Body, Mind, Voice, Improvisation and imagination.
CO3: Apply Theatre design - Direction, Stage Mgt &Sets and Props Costumes, Light and Sound, Backstage, theme, Creating a framework and script, designing Stage management, Budgeting and Marketing.
CO4: Create masks for stock characters. Costumes and make-up, stop motion, puppetry, Incorporating dialogue and acting.
CO5: Analyse play, Production Design and Art Direction Story, Plot and Themes ,Symbols, Character Development.

Department of Psychology, English , Journalism

PSO1: Understand the nature and basic concepts of Psychology, English literature, and Journalism and express them effectively in writing and speech.
PSO2: Analyse the relationship between individual and society, and the various ways individuals respond to socio-political-religious and economic factors.
PSO3: Think critically about arguments and texts while taking into account diverse interpretations from different subject positions and acquire the ability to act in a socially responsible, ethical and humane way, grooming themselves towards effective citizenship.
PSO4: Apply the theories of Psychology, English Literature, and Journalism in conducting investigations on complex problems concerning the human being, his behaviour and existence in society.

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English-I

CO1: Identify the various roles of editors in a newspaper agency.
CO2: Identify and apply the various techniques of good news writing.
CO3: Identify and apply the rules of word usage through specific examples.
CO4: Judge the importance of chronology in a news story.
CO5: Compose better introductions.

Introduction to Psychology I

CO1: Understand various historical and modern perspectives of Psychology.
CO2: Explain the biological foundations of human behaviour.
CO3: Analyze the mechanisms of human sensation and perception.
CO4: Explain the principles of learning
CO5: Classify the various types of memory

Introduction to English Language and Literature

CO1: Identify characteristic features and causes of growth of the English language
CO2: Appraise the historical and literary aspects of the Age of Chaucer and Shakespeare
CO3: Point out the literary contributions of Chaucer and Shakespeare in the context of the Middle English age and the Elizabethan Age respectively.
CO4: Appraise the historical and literary aspects of the Puritan, Restoration and Augustan ages.
CO5: Appraise historical and literary aspects of the Pre-Romantic, Romantic, Victorian and Modern ages.

Introduction to Communication and Journalism

CO1: Understand and analyze the role of communication and various models of communication.
CO2: Understand the concept of mass communication and the history of mass media in India and compare different forms of mass media
CO3: Discuss and differentiate the types of contemporary Newspapers and magazines in English and Telugu.
CO4: Learn and Differentiate Types of Newspapers and Magazines
CO5: Appraise and understand the ethics of Journalism.

English II

CO1: Identify the structure of a news story.
CO2: Classify background to news stories as background for interest and background for intelligibility and compare the two kinds of background.
CO3: Identify the features of news features editing.
CO4: Analyse the various techniques of editing and rewriting a news story.
CO5: Apply the principles of editing on various news stories.

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Textual Taxonomy of the Literary Genre

CO1: Interpret the basic poetic terms, forms, devices.
CO2: Analyse the purposes of and gauge appropriate responses to rhetorical tools.
CO3: Apply the basics of dramatic art, primary types of drama and dramatic devices.
CO4: Analyse the different types of essays and novels.
CO5: Survey genres of the short story, the biography and the autobiography.

Introduction to Psychology II

CO1: Analyze the fundamental processes underlying human behavior such as thinking, intelligence
CO2: Understand the basic theories of human motivation and emotion.
CO3: Apply the principles of psychological testing.
CO4: Evaluate various theories of human personality.
CO5: Understand altered states of human consciousness**.**

Middle English and Elizabethan Age

CO1: Identify the socio-political features of the Middle English age through literary study.
CO2: Identify and analyse literary, social, cultural and historical contexts through a study of Chaucer's 'The Canterbury Tales.'
CO3: Identify and analyse literary, social, cultural and historical contexts through a study of Marlowe's 'Dr. Faustus.'
CO4: Identify and analyse literary, social, cultural and historical contexts through a study of Shakespeare's selected sonnets and his dramatic comedy.
CO5: Identify and analyse literary, social, cultural and historical contexts through a study of Bacon's selected essays.

Introduction to Socio Political India

CO1: Understand the concept of Indian society and analyse the socio-cultural changes in contemporary India.
CO2: Analyse the constitutional rights, duties and the structure of Indian Government.
CO3: Identify various marginalized groups in India and to asses various beneficial policies implemented by the government.
CO4: Understand the concept and types of human rights and subdivide the role of UN and other NGO's in preserving them.
CO5: Identify and analyse various social, cultural and economic impacts of Globalization on the Indian society.

Communication Skills/ Career Skills/ Psychology for Living

CO1: Understand the relevance of psychology in everyday life.
CO2: Explain the importance of self and relationships in one's life.
CO3: Identify various types of disintegrative experiences in daily life.
CO4: Appraise upon the mechanisms of growth and self actualization.

CO5: Evaluate the importance of recognizing and managing emotions in oneself and others.

Enhancing Psychological Competencies

CO1: Understand the importance and the need to enhance psychological competencies
CO2: Analyze the mechanisms of hope, optimism, resilience and subjective well being
CO3: Explain the workings of anxiety, depression, stress and coping methods in everyday life.
CO4: Explain the meaning and nature of emotions.
CO5: Evaluate the meaning and nature of pro-social behavior

Statistics in Psychology

CO1: Explain various methods of data representation
CO2: Analyze the measures of central tendency
CO3: Understand the concept of normal distribution curve.
CO4: Explain the significance of mean.
CO5: Identify various types of correlation methods.

Age of Milton, Dryden and Pope

CO1: Identify the poetic characteristics of Milton and Dryden and situate them in the literary scenes of the Puritan and Restoration ages respectively.
CO2: Distinguish the poetic features unique to Metaphysical poetry and understand its unique place in the literature of its time.
CO3: Show Donne, Marvel and Herbert's place in the universe of Metaphysical poetry and assess their contributions as metaphysical poets through a study of select poems.
CO4: Identify and analyse literary, social, cultural and historical contexts of Pre-Romantic poetry through a study of Gray's elegy.
CO5: Identify and analyse literary, social, cultural and historical contexts of the Augustan age through a study of Pope's mock epic.

Newspaper Management

CO1: Identify and discuss various ownership patterns of mass media in India.
CO2: Discuss the organizational structure and Categorise the functions of various departments in a Newspaper organization.
CO3: Appraise the role of various Apex bodies in media sector.
CO4: Assess and criticize the various press laws and acts in India
CO5: Distinguish and understand the problems of small newspapers and large newspaper organization.

Enhancing Psychological Competencies- II

CO1: Understand the importance of psychological competencies.
CO2: Apply the mechanisms of mindfulness.
CO3: Analyze the benefits of critical thinking, reasoning and logic.
CO4: Identify the reasons for enhancing psychological competencies.
CO5: Appraise the psychological challenges in contemporary life.

Personality Theories and assessment

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CO1: Understand the various factors influencing personality
CO2: Analyze major theoretical perspectives of personality.
CO3: Explain the trait and type theories of personality.
CO4: Apply various methods of personality assessment
CO5: Classify various types of psychological tests.

The Victorian Age

CO1: To classify the writers and their writings with relevance to their genres and to create a sound understanding on the background to the age.
CO2: To sketch the functioning of the age with specific reference to the literary genre *Drama*
CO3: To demonstrate their reading skills in the literary genre of the *Novel* and further be able to visualize and relate to the happenings in the age through the fiction.
CO4: To analyze and interpret the thought, complexities and poetical devices integrated in the literary genre *Poetry*.
CO5: T**o** criticize the literary texts having an orientation to the critical perspectives functional in the Victorian era.

New Literatures in English

CO1: Recognize the basic concepts and features of colonial and post-colonial literature and apply related literary terms.
CO2: Compare diverse post-colonial angles through the poetry of Angelou, Hope and Ramanujan.
CO3: Analyze the importance of Chinua Achebe as a post-colonial novelist through a study of 'Things Fall Apart.'
CO4: Praise the importance of Wole Soyinka as a post-colonial dramatist through a study of 'The Lion and The Jewel.'
CO5: Compare diverse post-colonial angles through the short stories of Gabriel Marquez and Patrick White and the essays of Emerson and Walker.

History of Indian Press

CO1: Understand the evolution, appraise various roles of press. Understand the history and origins of Press and Point out the role of journalists in the Indian freedom movement.
CO2: Identify the origin and development of regional press selecting various contemporary newspapers.
CO3: Identify the origin and development of regional press selecting various contemporary newspapers.
CO5: Understand and criticize the impact of globalization and corporatization on Indian press

Reporting and Editing

CO1: Understand the concept of reporting and survey various privileges and duties of a reporter.
CO2: Assess and Interpret the elements, structure and the types of News.
CO3: Discuss and Judge the techniques of reporting and art of editing.

CO4: Identify the types of headlines and the functions of editorial.
CO5: Analyse the layout of the newspaper with emphasis on picture editing and page makeup.

Organizational Behavior/Health Psychology Advertising/Online Journalism

CO1: Understand the concept and challenges of Organisational behaviour
CO2: Explain various methods of personnel selection
CO3: Identify various factors influencing productivity and job satisfaction.
CO4: Analyze the effects of noise and fatigue in the physical environment.
CO5: Evaluate various techniques of stress management.

Advertising/Online Journalism

CO1: Discuss and construct the overview of online journalism around the world.
CO2: Identify the various tools of online journalism.
CO3: Assess the concepts of citizen and participatory journalism.
CO4: Analyse the role of new media and social networks.
CO5: Understand and appraise the security and ethical challenges in online journalism.

Specialized Reporting

CO1: Understand and Judge the role of media in reporting crime.
CO2: Describe the principles of Political reporting and media's role in shaping public opinion.
CO3: Understand and Analyze national politics and Indian judicial system.
CO4: Analyse the techniques of sports reporting.
CO5: Understand fashion journalism and appraise working in fashion journalism

Abnormal Psychology

CO1: Classify various forms of abnormal behaviour.
CO2: Explain various types of anxiety and somatoform disorders
CO3: Identify various types of mood disorders.
CO4: Analyze the characteristics of various types of personality disorders.
CO5: Understand the various types of therapies in psychology

Romantic Age

CO1: Compare the socio-political features of the Romantic Age with the previous age through the ideological differences.
CO2: Assess the environmental ethics of Coleridge's The Rime of the Ancient Mariner. Analyse ideological, social, cultural and historical contexts through a study of poetry of Shelley and Keats.
CO3: Illustrate the social issues of the age with reference to 'The Chimney Sweepers.'
CO5: Identify the construction of gender and the ideological assumptions of the Regency Period through a study of Austen's 'Pride and Prejudice.'

Indian Writing in English

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CO1: Identify Indian Writing in English as a distinct approach to English literature from the Indian perspective.
CO2: Recognise and analyse Indian English writing themes, historical background, major writers of fiction, Non-Fiction, Poetry and Drama.
CO3: Identify and analyse literary, social, cultural and historical contexts through a study of Narayan's 'The Guide.'
CO4: Analyse literary, social, cultural and historical contexts through a study of selected Indian English short stories.
CO5: Analyse selected Indian English poems by representative writers to form an understanding of literary, social, cultural and historical contexts.

American Literature/Popular Literature

CO1: Appraise the scope of popular literature in literary studies and analyse the main genres of Popular literature.
CO2: Distinguish folk literature as a distinct genre of literary studies and compare its different forms.
CO3: Classify Horror, detective fiction and thriller as distinct genres of popular literature.
CO4: Identify the basic concepts of science fiction as a literary genre through a study of two representative texts.
CO5: Differentiate between comics and graphic novels and analyse their literary features.

Public Relations & Corporate Communication/Editorial Writing

CO1: Definition PR and Analyze various functions and types of Public relations in an organization
CO2: Analyze the Role of PR in Mass media and Understand Four Key stages of PR
CO3: Learn and categorize Public Relation tools and understand Anticipatory PR – Crisis management –Image management - event management
CO4: Discuss Media relations and infer coordination with media
CO5: Introduction to E- Communication and Categorize E- Journals, Websites, Intranet, Blogs and Web-based Media

Social Psychology

CO1: Understand the methods of Social Psychology.
CO2: Explain various theories of attribution.
CO3: Evaluate various theories of attitude formation.
CO4: Understand the nature and various factors influencing pro-social behaviour.
CO5: Explain the determinants of human aggression.

Developmental Psychology

CO1: Understand the concept of human development.
CO2: Explain the processes of change occurring during stage of prenatal development and infancy.
CO3: Evaluate various aspects of biological and psychosocial development in childhood.
CO4: Analyse various biological and psychological changes occurring during adolescence.
CO5: Identify the role of family, peers and community in influencing development in various

stages of adulthood.

Literature of Modern Age

CO1: Appraise the contribution of representative Modern English poets through a study of their selected poems.

CO2: Analyse the features of Modern English essays through a study of Woolf's and Gardiner's essays.

CO3: Appraise the contribution of E M Forster as a modern novelist with reference to his novel 'A Passage to India.'

CO4: Identify and analyse the features of Modernist short stories through a study of selected short stories.

CO5: Identify issues of class and language in Shaw's 'Pygmalion.'

B.Com Honours Strategic Finance

Sem 1

Business English – I

CO1. Students will be able to identify elements, forms and style of letters and will be able to create quotations related to inviting, sending and placing orders.

CO2. Students will be able to identify qualities and functions of a Sales Letter in order to enable them use the format of a Sales Letter.

CO3. To understand and write the functions, structure and types of memorandum and design a notice, agenda and minutes.

CO4. To demonstrate the guidelines for answering and making effective telephone calls in order to enable understand and implement Note making.

CO5. To have a better understanding of scanning and proof-reading incomprehension.

Fundamentals of Business Mathematics

CO 1. To solve linear equations.

CO 2. To get solutions of real-life problems by using logarithms and set theory.

CO 3. To solve the problems in business line like banking sector.

CO 4. To get maximum profit and minimum loss in company productivity.

CO 5. To measure areas & volumes

Fundamentals of Information Technology

CO1. Understand basic computer terminology and number system.

CO2. Explain about operating systems, and its types.

CO3. Identify different applications of Information technology.

CO4. Classify phases of Software Development Life Cycle

CO5. Categorize modern means of communication, types of networks and topologies.

Financial Accounting - I

CO1. Describes the need and importance of accounting.

CO2. Explains about subdivision of journal

CO3. Compares the cashbook and passbook balances to reconcile the difference.

CO4. Analyses the financial position of an organization

CO5. Identifies the mistakes in books of accounts and helps in correcting them.

Financial Planning and Performance

CO1. To understand strategic planning and budgeting and recall the models with process.

CO2. To classify forecasting techniques and demonstrate the budget.

CO3. To prepare an annual profit plan.

CO4. To analyse performance measures by using flexible budgets and compare actual results to planned results.

CO5. To propose performance measure and discuss key performance indicators.

SEM II

Business English II

CO1. Students will be able to synthesize the theoretical knowledge of business communication through report writing and letter writing.

CO2. Students will be able to identify the elements of Claim and Adjustment letters.

CO3. Students will also be able to draft claim letters and adjustment letters.

CO4. They will be able to identify nature and types of credit letters.

CO5. Students will be able to recognise tone and style of Collection Letters.

CO6. Students will comprehend the general guidelines to write application letters and resumes.

Value Education And Personality Development

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CO1. Students will be able to identify Accepted norms and Counter values and will be able to differentiate the various Dimensions of Human Development.

CO2. Students will be able to demonstrate Love and Experience of God.

CO3. They will be able to identify the Basic Issues of Life and Happiness as a life goal.

CO4. They will able to understand the importance of Concern for others and critique the various problems that deter the growth of the society.

CO5. The students will be able to recognize the traits of a good personality and they will be able identify their personality by Self-Exploration

CO6. Students will be able to interpret the Purpose of Life and Goal Setting

Managerial Economics

CO-1 To define managerial economics and to describe the economic concepts, tools, and practices used in managerial economics.

CO-2 To explain demand analysis and to apply demand forecasting methods based on nature of product.

CO-3 To analyse input-output relation in different time periods.

CO-4 To identify and distinguish different market structure in price – output decision.

CO-5 To compare different pricing strategies.

Financial Accounting – II

CO1. Introduces to the basic concepts of partnership and explains the admission of a partner.

CO2. Demonstrates the accounting treatment relating to retirement and death of a partner.

CO3. Identifies the rules applicable for winding up of partnership and insolvency of a partner.

CO4. Shows the method of finding out profits and financial position by using incomplete records.

CO5. Illustrates method of preparing books under Hire purchase and instalment purchase system.

Financial control

CO-1 To define cost behaviour and types of costs.

C0-2 To classify costing systems and compare different types of costs.

CO-3 To solve problems in supply chain management.

CO-4 To criticize and conclude the basis of internal auditing.

CO-5 To develop and create a business continuity plan.

Fundamentals of Business Statistics

CO1: Organize, manage and present data. Can represent the statistical data in diagrammatic and graphical form.
CO2: Calculate measures of central tendency.
CO3: Analyse the data using measures of dispersion.
CO4: Evaluate the nature for the statistical data using skewness and moments.
CO5: Determine the relation between any two factors using the concepts of correlation and regression analysis.

SEM III

Advanced Statistics

CO1: Derive the probability mass and density functions of random variables and then to calculate mean and variance.
CO2: Identify the characteristics of different discrete distributions like binomial, poisson and negative binomial distributions.
CO3: Able to perform and analyse hypothesis tests of means, proportions and variances using both one-and two-sample data sets.
CO4: Able to apply the appropriate chi-squared test for independence and goodness of fit.
CO5: Demonstrate understanding of the concepts of time series and its applications in different areas.

Ecommerce

CO1. To measure areas and Volumes describe electronic commerce framework and WWW architecture.

CO2. Classify mercantile process models and types of electronic payment system.

CO3. Apply EDI implementations and analyse intra organisational electronic commerce.

CO4.Design corporate digital library, advertising and marketing on the internet.

CO5. Identify consumer search and resource discovery, on demand education and digital copy rights.

Financial Reporting

CO1. Students will be able to prepare financial statements according to US GAAP and IFRS.

CO2. Students will be able to appropriately account and report assets and liabilities.

CO3. Students will be able to develop conceptual understanding on equity transactions.

CO4. Students will be able to recognize revenue recognition principles.

CO5. Students will be able to analyse reports on financial statements.

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Direct Taxes

CO1: To understand the basic definitions of income tax, agricultural income, residential status and exempted incomes.
CO2: To show the computation of income from the head salaries and house property as per it act.
CO3: To identify the income from business, profession and capital gains.
CO4: To compute total income of individuals and HUF.
CO5: To assess the tax liability of individuals and HUF as per IT act.

Financial Decision Making

CO1. Students will be able to understand a Common size financial statement and recall and relate the financial ratios.
CO2. Students will be able to identify the relationship between risk and return and utilize the knowledge of long-term financial management.
CO3. Students will be able to examine financial markets and regulations and analyse working capital management.
CO4.Students will be able to explain mergers and acquisitions, bankruptcy.
CO5. Students will be able to analyse corporate restructuring.

SEM IV

Economic Environment of Business

CO1: To describer changing dimensions of business environment.
CO2: Select key macroeconomic indicators and differentiate between economic growth and development.
CO3: To analyse problems and policies of Indian industries.
CO4: To compare merits and demerits of foreign capital in Indian economy.
CO5: To combine various business regulations for effective corporate governance.

Corporate Accounting

CO1: To understand the various types of capital structures of the company and their representation in the balance sheet, preparation of financial statements with profits before incorporation.
CO2: Explains the valuation of shares and goodwill.
CO3: Analyses amalgamation in the nature of merger and purchase and accounting treatment for internal reconstruction.
CO4: Demonstrates the accounting systems of a banking company under the guidance of rbi.
CO5: Helps to prepare insurance accounts as per IRDAI guidelines.

Principles of Management

CO1: To identify and interpret the various principles and importance of management
CO2: To explain and demonstrate the uses of planning and organizing
CO3: To classify and combine the various techniques of control and coordination.
CO4: To point out and develop the essence of motivation and direction to the students

CO5: To interrelate and understand the essence of leadership and the importance of Communication

Financial Decision Making II

CO1. Student will be able to define marginal, sunk and opportunity costs and recall cost volume profit analysis.

CO2. Student will be able to demonstrate understanding of pricing methodologies.

CO3. Student will be able to identify a system of investment decision and develop stage of capital budgeting.

CO4 Student will be able to demonstrate understanding enterprise risk management.

CO5. Student will be able to understand the importance of ethics for management accounting and financial management professional.

Research Methodology

CO1: To understand and interpret the basic meaning of research, to define the research problem at hand and construct the procedure for undertaking research.
CO2: To formulate hypothesis and develop an appropriate research design.
CO3: To classify the different sources of data and analyse the various methods of data collection.
CO4: To develop the most appropriate sample size and design as well as determination of sampling and non-sampling errors.
CO5: To classify the various types of attitude measurement scales and applies the principles and format of report writing and presentation.

SEM V

Marketing Management

CO1: Explains the concept of marketing and sketches the marketing environment.
CO2: Classifies the market and identifies the various market segments
CO3: Point outs the marketing mix with reference to product and price
CO4: Analyses the promotion mix and the channels of distribution.
CO5: Explains service marketing mix and points out the importance of direct and online marketing.

Advanced Corporate Accounting

CO1: To explain legal provisions of holding company's under schedule iii of companies act and preparation of consolidated balance sheet.
CO2: To show the capital structure of holding company and subsidiary companies and preparation of accounts relating to intercompany transaction.
CO3: To analyse public utility company's double accounting system.
CO4: To differentiate between operating and financial lease.
CO5: To appraise the liquidation process of the company through preparation of statement of

affairs, deficiency account, liquidated financial statement.

International Marketing and Export Management

CO1: Analyze the process of international markets and classify India's export trade
CO2: Describe the important factors of international marketing environment and differentiate marketing research, market selection, and market segmentation
CO3: Analyze the importance of product and distribution strategies
CO4: Differentiate the need for promotion mix strategies and pricing decisions
CO5: Explain foreign exchange strategies, differentiate balance of payments and balance of trade, and interpret international economic organizations

Corporate Governance and Business Ethics

CO1: Identify and explain the importance of values and ethics.
CO2: Analyze and interpret the various theories of ethical value system.
CO3: Point out the relationship between law and ethics and understand the impact of law on the business.
CO4: Explain the corporate governance codes, transparency and disclosure in the corporate.
CO5: Identify and point out the global issues of governance.

Banking Theory and Practice

CO1: To identify and illustrate the origin and growth of banking in India.
CO2: To interpret the features of various types of negotiable instruments.
CO3: To demonstrate and apply the steps involved in opening a bank account.
CO4: To appraise and criticize the various types of collateral securities and point out the precautions to be taken by a banker while advancing loans against different types of securities.
CO5: To understand the organizational structure and functions of co-operative banks, NABARD and RBI.

Business Law

CO1: Demonstrate an understanding of the legal environment of the business.
CO2: Explains legality of object and consideration, discharge of a contract and remedies available.
CO3: Identify the recognition of transactions involving the sales of goods act.
CO4: Dramatize the application of consumer protection act.
CO5: To recognize intellectual property rights and introduction to it act 2000 and right to information act.

Database Management System

CO1.Understand database design using E-R diagram
CO2.Classify normalization and relational algebra.
CO3.Create database tables to implement queries.
CO4.Analyse procedural language and storage media.
CO5.Evaluate transactions and its recovery system.

Entrepreneurial Development

- To serve as an invaluable guide for students who want to enter into entrepreneurship arena.
- To create and develop qualities of leadership and motivate hidden talents of entrepreneurship embedded in the minds of students.

SEM VI

Financial Markets and Institutions

CO1: To classify about financial markets and services.
CO2: To explain about the capital markets with reference to stock market as per SEBI regulations.
CO3: To sketch the working of money market in the Indian financial system.
CO4: To analyse the derivatory and depository system.
CO5: To appraise financial service system relating to mutual funds and merchant banking.

Human Resource Management

CO1: To understand the concept of HRM, functions and changing role of a HR manager
CO2: To distinguish between the various methods of job design and interpret the techniques of acquisition of human resource.
CO3: To explain the importance of HRP and point out the various HRD approaches for work life balance and describe the concept of job evaluation.
CO4: To analyse the core concepts of HRD, TQM and understand the concept of career development.
CO5: To explain the various concepts of worker's participation and quality of work life.

Accounting for Management – II

CO1: To find and understand the relation among cost, volume & profit
CO2: Enable the students to prepare various kinds of budgets.
CO3: To solve linear programming problems, transportation problems.
CO4: To understand responsibility accounting, human resource accounting & amp; inflation accounting.
CO5: To create and write the various reports to provide the required information for management.

Labour Law

CO1: To understand various provisions of factories act.
CO2: To explain the rules regarding workmen compensation and provident fund act.
CO3: To illustrate the gross profits of a banking company and non-banking company.
CO4: To show various adjudication machinery.
CO5: Tells about rights, duties and liabilities of registered trade unions.

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Auditing and Accounting Standards

CO1: To understand the basic concepts of auditing and the nature and scope of auditing.
CO2: To organize the various steps in an auditing process and point out the techniques of vouching of cash payments and receipts.
CO3: To analyze the features and importance of internal control, check and audit.
CO4: To prepare different types of audit reports and explain the procedure for appointment and removal of a company auditor.
CO5: To understand the regulatory framework in which accounting standards are formulated and operated

Company Law

CO1: To develop basic knowledge of provisions of companies act 2013.
CO2: To describe the capital structure of company through issues of shares and alteration of share capital.
CO3: Explain the borrowing powers of a company and consequences of ultra vires borrowing.
CO4: State various provisions of the companies act relating to company management and meetings.
CO5: To identify various modes of winding up and legal provisions applicable.

Indirect Taxes

CO1: To describe basic scheme of GST, GST council power and functions.
CO2: To explain various GST acts and also various definitions
CO3: To identify the registration procedure, levying of GST and exemptions
CO4: To analyse different types of assessments and returns under GST
CO5: To appraise the EXIM procedure as per customs legislations in India

Computer Science & Cognitive Systems

GENERAL ENGLISH -I

CO1: To distinguish between words which are either spelt or pronounced alike, yet render distinct meanings; imparting a sound clarity on everyday usage of language and for developing the art of parallel listening and writing.

CO2: To construct vocabulary and to gain understanding on the tense component, a pivotal constituent for language structuring and vocabulary building.

CO3: To identify with economical word constructions, paying specific attention in constructing sound writing skills.

CO4: To interpret functional grammar, the basic part involved in sentence constructing to improve linguistic skills.

CO5: To develop communication skills to provide a platform for language efficiency for effective language delivery.

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VALUE EDUCATION & PERSONALITY DEVELOPMENT

CO1: Students will be able to differentiate Accepted norms and Counter values and be able to identify the various Dimensions of Human Development.

CO2: Students will be able to demonstrate Love and Experience of God and identify the Basic Issues of Life and Happiness as a life goal.

CO3: They will able to understand the importance of Concern for others and critique the various problems that deter the growth of the society.

CO4: The students will be able to recognize the traits of a good personality and practice Self-exploration.

CO5: Students will be able to interpret the Purpose of Life and Goal Setting and demonstrate Self-management.

INTRODUCTION TO WORK SHEETS

CO1: Explain the concepts of MS-Excel

CO2: Analyze various functions and illustrate data in Excel

CO3: Demonstrate the working of Visual Basic

CO4: Develop programming concepts using VB

CO5: Subdivide larger programs into smaller ones using subroutines

OPERATING SYSTEMS

CO1: Explain Process management and CPU scheduling.

CO2: Understand deadlock and paging concept.

CO3: Demonstrate Windows 7 Installation.

CO4: Analyze about Windows server 2012.

CO5: Demonstrate Windows Server 2012-Storage and Backup Management.

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COMPUTER FUNDAMENTALS

CO1: Understand various I/O devices and functionality of computer

CO2: Understand types of memory and software

CO3: Solve arithmetic operations using different types of number systems

CO4: Distinguish different types of networks, networking devices and topologies.

CO5: Explain various IP addressing mechanisms

PROBLEM SOLVING AND PROGRAMMING IN 'C'

CO1: Explain the basic introduction of C programming languages.

CO2: Categorize different data types, operators and data input /output functions in _C '.

CO3: Develop programs using _C' control structures, arrays and string concept.

CO4: Analyse larger problems into smaller ones using _C' functions.

CO5: Create programs using the concept of structures, union and file handling in _C'.

GENERAL ENGLISH –II

CO1: To identify a sound understanding on the formation of words and to demonstrate the functional grammatical component in the sentence.

CO2: To paraphrase ideas and thoughts in a coherent, neat and organized manner in order to utilize the writing skills for sound writing propagandas.

CO3: To create an understanding on Indian Literature, alongside to develop and chisel their communication skills.

CO4: To recognize the moral element which underlies in the short story; an exposure to informal language.

CO5: To develop listening and speaking skills through effective sentence constructions and efficient delivery.

INDIAN HERITAGE & CULTURE

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CO1: The student can understand better about the origin of ancient Indian culture and the contributions of great rulers from both north and south India for Indian culture in ancient days

CO2: Students will analyse how Persian culture entered into India and how it influenced the Fine Arts of Indian society like Classical Music, Dance and Architecture.

CO3: Student can able to assess how the Indian orthodox society turn into modern and western society in the 19th century . It also edifies the students with spiritual doctrines of various Religions. **CO4**: Students will evaluate various challenges face by the youth and the evil affects of terrorism on society.

CO5: The topics in the unit create belongingness among the students by bringing awareness of the rights and duties to make the world a better place and it throw light on gender sensitization issues of women, Children and LGBT.

WEB PROGRAMMING

CO1: Illustrate basic html scripts to design web pages

CO2: Explain about cascading style sheets

CO3: Analyse java script programming using operators, expressions, functions

CO4: Classify event handling in java script.

CO5: Explain displaying XML documents with CSS

MATHEMATICS FOR COGNITIVE SCIENCE

CO1: Construct simple mathematical proofs and possess the ability to verify them.

CO2: Apply basic counting techniques to solve combinatorial problems.

CO3: Solve problems using recurrence relations and recursion to analyse algorithms and programs such as finding Fibonacci numbers and Tower of Hanoi problems.

CO4: Understand to find the rank of a matrix and to solve systems of linear equations applying matrix techniques.

CO5: Determine eigenvalues and eigenvectors.

COMPUTER NETWORKS

POs, PSOs, COs of All Programme for the Academic Year - 2020-21

CO1: Identify basic computer network topologies and protocols and explain Data Communication System components

CO2: Describe Wireless Transmission

CO3: Understand IP Addressing Version and Switch Basic

CO4: Configure RIP, EIGRP and OSPF protocols

CO5: Understand operation of Wireless networks, NAT and ACL

C++ and DATA STRUCTURES

CO1: Differentiate between object-oriented programming and procedure-oriented programming.
CO2: Develop programs using object oriented programming features.

CO3: Organize the data using sorting and various linear data structures and determine the time complexity

CO4: Illustrate non-linear data structures like trees, graph

CO5: Choose appropriate data structures to represent data items in real world problems

ENVIRONMENTAL STUDIES & GENDER SENSITIZATION

CO1: Understand the importance of Environmental education, conservation of natural resources &understand the importance of ecosystems and biodiversity

CO2: Understand the pollution problems and apply the environmental science knowledge on solid waste management, disaster management

CO3: Apply the environmental science knowledge to improve the resources and Evaluate and understand the sustainable environmental conditions and control methods

CO4: Identify the interactions and intersections of identities (e.g., gender, race, ethnicity, class, sexuality, and so on) and assess the ways in which they contribute to instances of privilege and power dynamics across cultures, space, and time. And their problems

CO5: Understand the gender problems and ways of addressing them, including interactions across local to global scales in communities and overcome inequalities with legislations.

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DISCRETE MATHEMATICS

CO1: Develop understanding of Logic Sets and Functions

CO2: Evaluate and apply the fundamental concepts in graph theory

CO3: Develop an understanding of how graph and tree concepts are used to solve problems arising in the computer science.

CO4: Express the concepts and results of Number Theory.

CO5: Identify methods and techniques used in number theory.

INFRASTRUCTURE MANAGEMENT

CO1: Demonstrate Installation and Managing Windows 10 Systems

CO2: Analyze Manaing Systems using System Center 2012

CO3: Demonstrate Deployment and Management of System Center 2012

CO4: Understand Managing and Monitoring Infrastructure using System Center 2012

CO5: Demonstrate Reporting of Infrastructure using System Center 2012

VIRTUALIZATION AND CLOUD

CO1: Understand Distributed Systems and its Application.

CO2: Analyze Cloud Service Models and Deployment Models

CO3: Demonstrate Virtual Networks Configuring and Managing Virtual Storage

CO4: Understand vSphere Update Manager and Host Maintenance

CO5: Demonstrate Role of data center in cloud computing

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PYTHON PROGRAMMING

CO1: Explain the basics of Python Programming constructs.

CO2: Sub divides larger problems into smaller ones using functions

CO3: Apply various data structures for problem solving

CO4: Apply object-oriented programming features for solving a given problem

CO5: Select an appropriate exception handling depending on application and design file operations using Python standard library

PROBABILITY & STATISTICS

CO1: Employee the principles of linear regression and correlation, including least square method, predicting a particular value of Y for a given value of X and significance of the correlation coefficient. **CO2**: Use discrete and continuous probability distributions, including requirements, mean and variance, and making decisions.

CO3: Able to perform and analyze hypotheses tests of means, proportions and variances using both one-and two-sample data sets.

CO4: Able to apply the appropriate Chi-Squared test for independence and goodness of fit.can differentiate between the test statistics to be used for dependent and independent samples

CO5: Understand the concepts of quality control, chance and assignable causes of variation, control charts for variables.

OBJECT ORIENTED SYSTEMS DEVELOPMENT

CO1: Explain basics of OOSD concepts

CO2: Categorize Object oriented methodologies and UML diagrams.

CO3: Choose classification theory and performing case studies.

CO4: Design models based on Object oriented concept.

CO5: Identify software quality, system usability, measuring and satisfaction.

ARTIFICIAL INTELLIGENCE

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CO1: Apply basic principles of AI in solutions that require problem solving, inference, perception, knowledge representation, and learning.

CO2: Understand predicate logic and transform the real life information in different representation. **CO3**: Understand formal methods of knowledge representation

CO4: Demonstrate Knowledge representation techniques.

CO5: Analyze the underlying mathematical relationships and build expert system.

DATABASE MANAGEMENT SYSTEMS

CO1: Represent logical database using Entity Relationship and Enhanced ER model.

CO2: Formulate database using relational algebra and organize relation using normalization.

CO3: Design SQL queries and implements PL/SQL.

CO4: Classify the storage and file structure, storage access, indexing and hashing techniques of the database.

CO5: Explain the concept of Transactions, recovery system and concurrency control.

PROCESS MANAGEMENT

CO1: Explain basics of software engineering process models

CO2: Understand agile methodologies and scrum roles.

CO3: Demonstrate Agile and Devops.

CO4: Explain Lean UX and Agile anti-patterns.

CO5: Classify design thinking and lean thinking

JAVA PROGRAMMING

CO1: Understand fundamentals of object oriented concept, classes, objects and methods

CO2: Apply inheritance, packages and exceptional handling techniques

CO3: Demonstrate Threads and applet programming.

CO4: Express event handling and swing components.

CO5: Design interactive programs using swing.

B.COM - BUSINESS PROCESS MANAGEMENT

FIRST YEAR- SEMESTER-I

Financial Accounting - I

CO1: Describes the need and importance of accounting.
CO2: Explains about subdivision of journal
CO3: Compares the cashbook and passbook balances to reconcile the difference.
CO4: Analyses the financial position of an organization
CO5: Identifies the mistakes in books of accounts and helps in correcting them.

Principles of Management

CO1: To identify and interpret the various principles and importance of management
CO2: To explain and demonstrate the uses of planning and organizing
CO3: To classify and combine the various techniques of control and coordination.
CO4: To point out and develop the essence of motivation and direction to the students
CO5: To interrelate and understand the essence of leadership and the importance of communication

Fundamentals of Business Statistics

CO1: Organize, manage and present data. Can represent the statistical data in diagrammatic and graphical form.
CO2: Calculate measures of central tendency.
CO3: Analyse the data using measures of dispersion.
CO4: Evaluate the nature for the statistical data using skewness and moments.
CO5: Determine the relation between any two factors using the concepts of correlation and regression analysis.

Business Economics

CO1. Understand the basic terms and concepts used in the Business economics.
CO2. Appraise the behavior of consumers through the demand and indifference analysis
CO3.Interpret the behavior of producer through supply, production and other related concepts
CO4.Differentiate the market forms and the price and output determination under each type of market.
CO5.Infer the impact of the different phase of business cycle and impact of deficit balance of payment.

FIRST YEAR- SEMESTER-II

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Financial Accounting – II

CO1: Introduces To The basic concepts of partnership and explains the admission of a partner.
CO2: Demonstrates the accounting treatment relating to retirement and death of a partner.
CO3: Identifies the rules applicable for winding up of partnership and insolvency of a partner.
CO4: Shows the method of finding out profits and financial position by using incomplete records.
CO5: Illustrates method of preparing books under hire purchase and instalment purchase system

Managerial Economics

CO1. Understand the basic terms and concepts used in the Managerial economics.
CO2. Interpret the behavior of producer through cost and revenue concepts in different time perspective.
CO3. Differentiate the various Pricing strategies and the various degrees of Price discrimination.
CO4.Evaluate the various Capital Budgeting decision and the methods.
CO5. Infer the impact of the macro economic factors on the business concerns

Fundamentals of Business Mathematics

CO1: To solve linear equations.
CO2: To get solutions of real life problems by using logarithms and set theory.
CO3: To solve the problems in business line like banking sector.
CO4: To get maximum profit and minimum loss in company productivity.
CO5: To measure areas & volumes

Fundamentals of Information Technology

CO 1. Understand basic computer terminology and number systems**.**
CO 2. Explain about operating systems, and its types
CO 3. Identify different applications of Information technology.
CO 4. Classify phases of Software Development Life Cycle
CO 5. Categorize modern means of communications, types of networks and topologies

SECOND YEAR- SEMESTER-III

Direct Taxes

CO1: To understand the basic definitions of income tax, agricultural income, residential status and exempted incomes.
CO2: To show the computation of income from the head salaries and house property as per it ACT.
CO3: To identify the income from business, profession and capital gains.
CO4: To compute total income of individuals and HUF.

CO5: To assess the tax liability of individuals and HUF as per it act.

Business Law

CO1: Demonstrate an understanding of the legal environment of the business.
CO2: Explains legality of object and consideration, discharge of a contract and remedies available.
CO3: Identify the recognition of transactions involving the sales of goods act.
CO4: Dramatize the application of consumer protection act.
CO5: To recognize intellectual property rights and introduction to it act 2000 and right to information act.

Advanced Accounting

CO1. States various methods for preparing branch accounts.
CO2. Describes the allocation and interdepartmental transfer of expenses.
CO3. Analyses the financial position of non-trading concerns.
CO4. Evaluate the different situation of capital issue to public issue of shares at par, premium and forfeiture.
CO5. Explains about sources of funds through issue of debentures and various methods of redemption.

Banking Theory

CO 1. To Understand the General Overview of Banking and Retail Banking
CO 2. To Analyze about the Cards overview and types
CO 3. Explain about the Consumer Loans and Mortgages
CO 4. Interpret Cash Management and Payment Services
CO 5 Evaluate the Trade Finance, Collections, payments, Guarantees & settlements and value added services

Retail Environment And Market Research

CO1: To understand and interpret the basic meaning of Marketing Research, and Consumer Behaviour
CO2: To classify the different segmentation and analyze the overview of retailing.
CO3: To critically evaluate the application of Marketing Mix and Consumer Research
CO4: To explain and Differentiate Product Management, Brand management & media management
CO5: To critically evaluate the application of Consumer Research, Retail Research & Media Research

SECOND YEAR- SEMESTER-IV

Corporate Accounting

CO1: To understand the various types of capital structures of the company and their

representation in the balance sheet, preparation of financial statements with profits before incorporation.

CO2: Explains the valuation of shares and goodwill.

CO3: Analyses amalgamation in the nature of merger and purchase and accounting treatment for internal reconstruction.

CO4: Demonstrates the accounting systems of a banking company under the guidance of rbi.

CO5: Helps to prepare insurance accounts as per IRDAI guidelines.

Company Law

CO1: To develop basic knowledge of provisions of companies act 2013.

CO2: To describe the capital structure of company through issues of shares and alteration of share capital.

CO3: Explain the borrowing powers of a company and consequences of ultra vires borrowing.

CO4: State various provisions of the companies act relating to company management and meetings.

CO5: To identify various modes of winding up and legal provisions applicable.

Indirect Taxes

CO1: To describe basic scheme of GST, GST council power and functions.

CO2: To explain various GST acts and also various definitions

CO3: To identify the registration procedure, levying of GST and exemptions

CO4: To analyse different types of assessments and returns under GST

CO5: To appraise the exim procedure as per customs legislations in India.

Principles of Insurance

CO1: To Explain Overview of Insurance and types

CO2: Demonstrate of Life Insurance & Annuity

CO3: Evaluate and understand the Property & Casualty Insurance

CO4: To Explain abut Healthcare Insurance

CO5: To critically evaluate the application of the Retirement Services

Costing Accounting

CO1: To understand importance of cost accounting in organization.

CO2: To describe the principles of managing inventories of materials and the procedures for accounting inventory.

CO3: To describe the principles and practice of costing labour to a business.

CO4: To describe the principles and process of overhead cost analysis.

CO5: To apply the operation of process costing methods.

Capital Markets

CO 1. To Understand Capital Markets and Types of Securities

CO 2. To explain about the Financial Markets

CO 3. To Describes Investment Banking

CO 4. To Explain Funds and kinds of funds
CO 5. To understand Private Equity, Credit Risk and Market Risk Management

B. Com Business Analytics

Fundamentals of Information Technology

CO1: Explain basic computer terminology and number systems.
CO2: Classify types of operating systems and user interfaces
CO3: Choose different applications of Information technology and transaction processing.
CO4: Analyze System Development and Challenges of Digital Age
CO5: Compare modern means of communications, types of networks and topologies

Financial Accounting - I

CO1: Describes the need and importance of accounting.
CO2: Explains about subdivision of journal
CO3: Compares the cashbook and passbook balances to reconcile the difference.
CO4: Analyses the financial position of an organization
CO5: Identifies the mistakes in books of accounts and helps in correcting them.

Data-Driven Decision Making

CO1: To identify and illustrate the Business Analysis Principles and pre-requisites.
CO2: To demonstrate and apply the steps involved in Business analytics ecosystem
CO3: To understand the Data Life Cycle Management and identify the stages in the data life cycle
CO4: To appraise the various types of Requirements gathering process and analyze why requirement gathering process.
CO5: To interpret the how requirement gathering fits with the development of a customer journey map.

Principles of Management

CO1: To identify and interpret the various principles and importance of management
CO2: To explain and demonstrate the uses of planning and organizing
CO3: To classify and combine the various techniques of control and coordination.
CO4: To point out and develop the essence of motivation and direction to the students
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CO2: To get solutions of real-life problems by using logarithms and set theory.
CO3: To solve the problems in business line like banking sector.
CO4: To get maximum profit and minimum loss in company productivity.
CO5: To measure areas & volumes

Data Analytics Essentials

CO1: To understand the variables for data analytics

CO2: To calculate measures of central tendency.
CO3: Analyse the Probability for Data Analytics.
CO4: Evaluate the nature for the statistical data using distributions.
CO5: Understand the concepts of Statistics in R Case and Apply Vectors in R

Managerial Economics

CO1: Understand the basic terms and concepts used in the managerial economics
CO2: Appraise the behaviour of consumers through the demand and indifference analysis
CO3: Interpret the behaviour of producer through supply, production and other related concepts
CO4: Differentiate the market forms and the price and output determination under each type of market.
CO5: Infer the impact of the macro-economic factors on the business concerns.

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CO3: Identifies the rules applicable for winding up of partnership and insolvency of a partner.
CO4: Shows the method of finding out profits and financial position by using incomplete records.
CO5: Illustrates method of preparing books under hire purchase and instalment purchase system.

Advanced Accounting

CO1. State various methods for preparing branch accounts.
CO2. Describe the allocation and interdepartmental transfer of expenses.
CO3. Analyse the financial position of non-trading concerns.
CO4. Evaluate the different situation of capital issue to public issue of shares at par, premium and forfeiture.
CO5. Explain about sources of funds through issue of debentures and various methods of redemption.

Digital Marketing

CO1: The aim of the Digital Marketing Course is to provide students with the knowledge about business advantages of the digital marketing and its importance for marketing success; to develop a digital marketing plan
CO2.; How to manage customer relationships across all digital channels and build better customer relationships, to create a digital marketing plan.
CO3. How to integrate different digital media and create marketing content; how to SEO optimization.
CO4. Differentiate the digital marketing strategies among different digital and social media platforms

CO5. Analyzing consumer behavior and developing segmentation targeting and positioning Strategies

Fundamentals Of Business Analytics

CO1: Understand basic concept of R.
CO2: Demonstrate programming concepts and data structures in R.
CO3: Analyse large problem by sub dividing it into smaller components using functions
CO4: Choose an appropriate graphic for analysis and analyse data using summary statistics.
CO5: Choose the type of regression based on data set

Web Design and Analytics

CO1: Understand HTML basic concepts
CO2: Apply knowledge to design web pages
CO3: Demonstrate cascading style sheets
CO4: Explain the java script concepts
CO5: Apply Google analytical techniques

Data Analytics Modelling

CO1: Understand the importance of Analytics in Business
CO2: Apply Data Cleaning Techniques on raw data
CO3: Demonstrate ETL process
CO4: Explain the concept of Data Warehousing
CO5: Understand the various forms of Data

Corporate Accounting

CO1. Understand the various types of capital structures of the company and their representation in the balance sheet, preparation of financial statements with profits before incorporation.
CO2. Explain the valuation of shares and goodwill.
CO3. Analyze amalgamation in the nature of merger and purchase and accounting treatment for internal reconstruction.
CO4. Demonstrate the accounting systems of a banking company under the guidance of RBI.
CO5. Help to prepare insurance accounts as per IRDAI guidelines.

Indirect Tax

CO1: To explain overview of GST
CO2: To Demonstrate CGST Act, SGST Act and IGST Act
CO3: To illustrate Procedure and Levy Under GST
CO4: To Calculate Assessment and Returns Under GST
CO5: To understand GST Network , Framework and Guidelines

Cost Accounting

CO1. Understand importance of cost accounting in organization.
CO2. Describe the principles of managing inventories of materials and the procedures for accounting inventory.
CO3. Describe the principles and practice of costing labor to a business.

CO4. Describe the principles and process of overhead cost analysis.
CO5. To apply the operation of process costing methods.

Company Law
CO1. Demonstrate an understanding of the Companies Act, 1956.
CO2. Explain the Kinds of Companies and Share Capital.
CO3. Appraise Borrowing powers Types and Debentures and Mortgages
CO4. Interpret the director's Powers, duties & liabilities and explain Meetings and Resolutions.
CO5. Infer Reconstruction and amalgamation and classify types of winding up

Social Media Marketing
CO1: To use Social Media Platforms like Facebook, Instagram, Twitter, YouTube, LinkedIn for the promotion of any business or service
CO2: To identify the niche areas where you can become an influencer
CO3: To identify and incorporate widely used tools for the social media activities
CO4: To start as a freelancer
CO5: To promote own / ancestral business organically using Social Media

Forecasting & Predictive Analytics
CO1: Understand the regression concepts
CO2: Apply data classification techniques
CO3: Demonstrate clustering mechanism
CO4: Explain the concepts of linear optimization
CO5: Apply data analytical techniques on sample data model

Business Intelligence
CO1: Understand the installation of POWER BI
CO2: Apply knowledge on BI tools
CO3: Demonstrate visualization techniques
CO4: Explain the integration of POWER BI with excel
CO5: Apply DAX techniques

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B. Sc. Food Science, Nutrition and Dietetics

Introduction to Nutrition

CO1: students will be able to describe the general classification, examples, deficiencies and functions of nutrients.
CO2: students will be able classify different vitamins and minerals and their requirements.
CO3: students will be able to create various diet plans form different age groups
CO4: students will be able to assess nutritional status
CO5: Students will be able to compare between different international agencies in overcoming malnutrition

Introduction to Food Science

CO1: The students will be able to understand various methods of food processing.
CO2: Students will be able to assess different preservative techniques.
CO3: Students will be able to evaluate the roll of carbohydrates and proteins in food.
CO4: Students will be able to differentiate various chemical reactions occurring in fats and oil.
CO5: Students will be able to classify vitamins and minerals and explain the roll of water.

Anatomy and physiology

CO1: The students will be able to describe basic aspects of anatomy and physiology.
CO2: The students will be able to classify different functions of digestive and respiratory system of human body.
CO3: Students will be able to identify different blood groups, endocrine glands.
CO4: Students will be able to appraise the functions of nervous and Musculo skeletal system.
CO5: Students will be able to describe the functions of reproductive and excretory system .

Family meal management

CO1: Students will be able to describe basic terms and principles of meal planning.
CO2: Students will be able to use nutritional knowledge to apply during pregnancy and lactation period.
CO3: Students will be able to identify nutrition related problems in infants and peaceful children.
CO4: Students will be able to construct knowledge on nutrition programs held by government.
CO5: Students will be able to identify the nutritional requirements, nutrition related problems in adults and geriatrics.

Human Nutrition

CO1: Students will be able to describe various food based on dietary guidelines.
CO2: The students will be able identify different types of eating disorders and their regulation.
CO3: The students will be able to explain the nutritional aspects of carbohydrates.
CO4: The students will be able to explain the nutritional aspects of lipids and proteins.
CO5: The students will be able to analyze the roll of antioxidants in health and diseases.

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Food Science and Chemistry (

CO1: The students will be able to identify different functional properties of macro molecules.
CO2: The students will be able to describe about water, water activity and its significance in food.
CO3: The students will be able to classify enzyme related to food.
CO4: The students will be able to compare different food additives and their and role in food industry.
CO5: The students will be able to explain structure and properties of plant and animal pigments

Nutritional Biochemistry

CO1: The students will be able to identify the importance of membrane structure and its functions.
CO2: The students will be able to identify the importance of enzymes and biological oxidation.
CO3: The students will be able to explain the carbohydrates chemistry and its metabolism.
CO4: The students will be able to explain lipid chemistry and its metabolism.
CO5: The students will be able to explain protein chemistry and its metabolism

Microbiology

CO1: The students will be able to identify different microorganisms associated with food.
CO2: The students will be able to appraise the microbial estimation in food.
CO3: The students will be able to classify microorganism associated with food and water.
CO4: The students will be able to compare different food preservation techniques used.
CO5: The students will be able to explain food borne illness caused due to microorganisms.

PRINCIPLES OF FOOD SCIENCE, NUTRITION AND DIETECTICS

CO1: The Student will classify food in relation to health as a source of nutrition.
CO2: Students will identify various principles and methods of presentations.
CO3: Students will be able to create knowledge on energy value of foods.
CO4: Students will be able to identify various deficiency disorders due to imbalance of nutrition.
CO5: Students will be able to construct various diet plans.

FOOD SAFETY AND TOXICOLOGY

CO1: The student will be able to understand the basic principles of food safety.
CO2: The student will be able to apply them knowledge of food laws for safe food production.
CO3: Students will be able to explain various toxicants associated with foods.
CO4: Students will be able to identify the chemical toxicants in food at various level.
CO5: Students will be able to appraise microbial toxin associated with food, their occurrence, symptoms and preventive measures.

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FOOD SCIENCE AND PROCESSING

CO1: Students will be able to understand the principles involved in processing of various food grains.
CO2: Students will be able to evaluate various steps to eliminate antinutritional components in nuts and oil seeds.
CO3: Students will be able to identify various dairy processing methods.
CO4: Students will be able to create and understanding on changes occurring in fruits and vegetables during maturation.
CO5: Students will be able to appraise the role of sugar in food preparation.

CLINCAL BIOCHEMISTRY

CO1: Students will be able to create knowledge on chemistry and metabolism of protein.
CO2: Students will be able to evaluate various gastric functions tests and endocrine disorders.
CO3: Students will be able apply the knowledge of liver and kidney function tests and interpret the results.
CO4: Students will be able to identify the various cardiac function tests.
CO5: Students will be able to appraise the roles of fluids , electrolytes and acid base balance.

NUTRITIONAL ASSESMENT AND SURVELLIANCE

CO1: Students will be able to construct knowledge on nutritional status assessment methods.
CO2: Students will be able to use dietary intake parameter to assess nutritional status.
CO3: Students will be able to explain biochemical parameter to assess nutritional status.
CO4: Students will be able to classify various nutritional surveillance system.
CO5: Students will be able to describe type of nutritional surveillance appropriate to different situation.

NUTRITION OF MACRO AND MICRO NUTRIENTS

CO1: The students will be able to differentiate between various fat-soluble vitamins.
CO2: The students will be able to understand the importance and deficiencies of water-soluble vitamins.
CO3: The students will be able to appraise the role of micro and macro minerals.
CO4: The students will be able to demonstrate the role of functional foods.
CO5: The students will be able to understand newer concepts in clinical and therapeutic nutrition.

PUBLIC HEALTH NUTRITION

CO1: The students will be able to understand the concept of public health & public nutrition
CO2: The students will be able to evaluate the key indicators used in public health
CO3: The students will be able to assess the problem of under nutrition in India
CO4: The students will be able to analyze indicators used to define various deficiency disorders
CO5: The students will be able to understand misleading about nutritional facts on labels and misinformation about nutrition.

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Food Science and Sensory Evaluation

CO1: Students will be able to understand the composition and cooking methods of egg, meat, fish and poultry.
CO2: Students will be able to classify spices and condiments
CO3: Students will be able to appraise the nutritional aspects of beverages.
CO4: Students will be able to justify the need for fortification of foods.
CO5: Students will be able to gain knowledge on various food commodities and sensory evaluation.

Food Preservation

CO1: Students will be able to understand the importance of food preservation.
CO2: Students will be able to prepare various food products.
CO3: Students will be able to distinguish between low and high temperature preservation.
CO4: Students will be able to identify latest developments in food preservation.
CO5: Students will be able to appraise the role of packaging in food preservation.

Applied Statistics

CO1: The students will be able to interpret the correlation between two variables.
CO2: The students will be able to develop the probability density function of transformation of random variables.
CO3: The students will be able to analyze hypothesis tests of means, proportions and variances using both one & two sample data sets.
CO4: The students will be able to explain t-test, chi-square test for independence of attributes and goodness of fit.
CO5: The students will be able to classify the analysis of variance of one-way and two-way classification.

Diet Therapy

CO1: The students will be able to design different communication models.
CO2: The students will be able to apply the knowledge of Medical Nutrition Therapy for Enteral and Parenteral Nutrition.
CO3: The students will be able to understand the Upper and Lower GI Disorders.
CO4: The students will be able to assess acute and chronic infectious disease.
CO5: The students will be able to gain knowledge on Nutrition Therapy for Diabetes Mellitus

Institutional Food Service Management

CO1: The students will be able to be identify different types of menus,"tool purchasing and food service institutes, Management of personnel in food devices organisation method of food purchasing.

CO2: Students will be able to learn about functions & tools of management, catering principles of catering management of & resources.
CO3: Students will be able to understand the importance. kitchen designs, types of storage and equipment Selection.
CO4: Students will be to evaluate the characteristics and quality of food.
CO5: Students will be able to appraise the labelling of food product and evaluate the various steps involved in formal and standardization of recipes.

Food Quality Control and Testing

CO1: Students will be able to Create an understanding Sems on role of food quality in food industry attributes and factors. influencing good quality.
CO2: Students will be able to learn about techniques in quality improvement.
CO3: Students will be able to evaluate the quality assurance from farm to table.
CO4: Students will be able to understand the different types of measuring instruments & methods to find shape & of food.
CO5: Students will be able to understand the protocols & assessment food Industries, hotels hospitals.

Diet and Medical Nutrition Therapy

CO1: Students will be able to understand the types of hospital diet's prescribed by the dietitians
CO2: Students will be able to learn the modification in the diet & nutritional care for wt management.
CO3: Students will be able to apply the knowledge of & diet in cardio vascular diseases & hypertension.
CO4: Students will be able to liver diseases appraise the hole of diet in liver diseases.
CO5: Students will be able to able to identify different types of renal disorder & its dietary management.

Quantity Food Production and Service

CO1: Students will be able to know the types and variety of foods available in markets also understand the method of food purchasing from the markets.
CO2: Students will be able to understand about planning of meals, principles and also about indenting and difficulties involved in indenting.
CO3: Students will have an exposure quality control of food production and also learn about standardization and storage of left-over foods.
CO4: Students will understand the different delivery and different types of services present in the market.
CO5: Students will have an exposure on financial management also about record to maintain the food.

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Basics Of Research

CO1: Students will be able to understand the importance of research, type of research also the variables present for the research.
CO2: Students will be able to learn the types of sampling and sampling designs also the criteria for selections of samples.
CO3: Students will be able to learn the principles and purpose of research design also the features of good research design.
CO4: students will be able to learn the different research tools and the method of collecting data.
CO5: Students will be able to understand about coding of data and also classification and tabulation of research data.

Food Product Development and Entrepreneurship

CO1: Students will be able to learn the basic principles, the role of different research to departments in food production industry
CO2: Students will be able to evaluate the different steps in fpd & learn the imp of shelf fife & storage stability of products.
CO3: Students will be able to understand the various types of new food products & learn the role of advertisement & products technologies in promotion of new products.
CO4: Students will be able to understand the role of govt in conditions promoting agricultural marketing for sale.
CO5: Students will be able to earn the concept entrepreneurship & economic contribution of Small business.

Newer perspective in public health nutrition

CO1: Students will be able to understand the – non communicable risk factors, global stating and Hop's stagy India in prevention of NED's programme. and monitoring of NCD's.
CO2: students will be control non able to understand policies to communicable diseases and nutrition. policy and plans of actions globally and state. in Telangana
CO3: students will be able to understand the concept and importance of millennium development goals & HDI and lancet series with inventory and management.
CO4: students will be able to understand the food security and availability local food available, nutritional quality of the foods. consequences and early nutrition and improvement, long term, double burden of malnutrition.
CO5: students will be able understand the global initiatives, reducing risk factors to communicable control the non-communicable diseases.

Advanced Nutrition

CO1: Students will be able to understand the importance of pediatric nutrition.
CO2: Students will be able to learn the recent guidelines of food suggested for geriatrics.

CO3: Students will be able to identify the different types of hyperlipidemia & its dietary management.
CO4: Students will be able to apply knowledge of diet in cancer.
CO5: Students will be able understand the importance of diet in various bone disorder & in different food intolerants.

Nutrition for Health of Women and Children
CO1: Students will be able to learn about the roles of women in national development , family and community.
CO2: Students will be able to learn about the policies that are taken for women and child nutrition.
CO3: Students will be able to know the nutritional requirements and health status of pregnant women.
CO4: Students will be able to learn the physiological and health implication in lactating mother.
CO5: Students will be able to learn the child health and nutrition who are suffering from malnutrition.

Emergency Nutrition
CO1: students will be able to understand the concept a severe acute malnutrition. Types consequences level. and burden of SAM, LCDS programes at community
CO2: students will be able to understand the facility. based management of SAM! WHO protocols and IMNEs training protocol.
CO3: students will be able to understand. SAM preventive measures, best prefeces of UNICEF, SAM management, strength of weakness of Telangana model to prevent SAM...
CO4: students will be able to understand WHO protocol identification of SAM Africa and forward for India
CO5: students will be able to understand the HIV, Role of nutrition in HIV treatment, breast feedings and nutrition role in T-B and treatment protocol nutrition role in malaria and epidemies.

COMMUNITY NUTRITION

CO1: Students will be able to learn the different communications, tools and techniques, also the different aids to communicate and also the responsibilities of a nutritional counsellor.
CO2: Students will be able to learn the nutrition policy and health status of community through national program for prevention of anemia and vitamin A deficiency and iodine deficiency disorders.
CO3: Students will be able to learn about food and its components, also the approaches for nutrition security.
CO4: Students will be able to learn about the health administrations and central, state, village level and primary health care.
CO4: Students will be able to learn about the occupational hazards, and women employees in the industries also the factories act and legislation.

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FOOD PACKAGING

CO1: Students able to understand the functions & different requirements for effective packaging.
CO2: Students to learn about various types of packaging materials, storages & it's distribution.
CO3: students to evaluate the different colours & market prices & also learn about the types of advertising in packaging designs.
CO4: Students to learn about the shelf-life theory & testing packaging materials.
CO5: Students to understand the different laws & regulations in food packaging.

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Master of Computer Applications (MCA)

Program Outcomes

PO1: Engineering knowledge: Apply the knowledge of mathematics, computer science,various programming languages, databases and operating system to develop a software system.
PO2: Problem analysis: Identify, formulate, review research literature, and analyze complex engineering problems to reach substantiated conclusions using first principles of mathematics, natural sciences, and engineering sciences.
PO3: Design/development of solutions: Design solutions for complex engineering problems and System components or processes that meet the specified needs of public health and safety.
PO4: Continuous learning: Recognize the needs and improves the ability to engage in independent and life-long learning as trends changes in technology.

Programme Specific Outcomes:

PSO1: To consolidate foundation of mathematics, computer science and problem solving methodology for effective implementation in the area of software development. To inculcate advance knowledge about various sub-domains of computer science and applications.
PSO2: To prepare graduates to achieve peer-recognition, as an individual and in a team, through demonstration of good analytical, design and implementation skills.
PSO3: To improve the ability to test and analyze the qualities of various subsystems and to integrate them together to evolve a larger and better computing system, that includes the concept of mathematics, computer engineering and related disciplines to meet the user objective .

Probability and Statistics

CO1: Classifying data and choose graphical representation
CO2: Explanation of descriptive measures
CO3: Evaluation of correlation, regression and testing.
CO4: Application of probability and distributions
CO5: Identification of data and applying specific distributions.

Discrete Mathematics

CO1: Define Statements, connectives, how to apply connectives, working with sets, and subsets and represent them in Venn diagrams
CO2: Explains about relations, ordering, functions, lattices and Boolean algebra illustrating with examples.
CO3: Explains about algebraic structures and groups by applying various theorems and solving for an appropriate result.
CO4: Explains about algebraic structures and groups by applying various theorems and solving for an appropriate result.
CO5: Constructs graphs, trees and planar graphs.

Computer Programming and Problem Solving Using C

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CO1: Understand the basic introduction of programming language, algorithms, flowcharts and Identify 'C' data types, operators and data input /output functions.
CO2: Understand 'C' control structures, arrays and its applications.
CO3: Explain 'Functions, Recursion and string concept.
CO4: Demonstrate 'C' Pointers, recursion and dynamic memory allocation.
CO5: Express the concept of structures, union and file handling in 'C'.

Computer Architecture

CO1: Demonstrate knowledge of register organization of a basic computer system
CO2: Explain machine language of a basic computer system.
CO3: Appraise in-depth understanding of control unit organization and micro programmed control.
CO4: Apply various algorithms to perform arithmetic operations and propose suitable hardware for them
CO5: Analyze and emphasize various communication media in the basic computer system using design of various memory structures

Operations Research

CO1: Identifying the methods to solve LPP.
CO2: Applying OR to transportation problems.
CO3: Applying OR to Assignment problems and IPP.
CO4: Creating the network diagrams for Project management problems.
CO5: Analyzing the game theory problems.

C++ and Data Structures

CO1: Differentiate between object-oriented programming and procedure-oriented programming.
CO2: Develop programs using object oriented programming features.
CO3: Develop programs using polymorphism.
CO4: Understand the linear data structures like linear lists, stacks and queues.
CO5: Understand the non-linear data structures like trees, graphs.

Operating Systems

CO1: Explain OS structures and process management concepts including scheduling.
CO2: Illustrate the concepts of memory management and file system
CO3: Analyze various process synchronization problems and deadlocks
CO4: Identify the results of disk scheduling algorithms and I/O systems
CO5: Describe various operating systems like Windows XP , Linux pertaining with Process , File , I/O management

Computer Networks

CO1: Defines Data Communication, components of networks, explains the type of Transmission media and describes the functions of each layer in OSI and TCP/IP model.
CO2: Describes the functions of Data link Layer and explains the various protocols.
CO3: Classify the routing protocols and analyze how to assign the IP addresses for the given network.

CO4: Describe the Transport layer header format and services
CO5: Explain the functions of Presentation layer and Application layer

Management Information Systems and M-Commerce

CO1: Understand use of information technology and business process in engineering and information technology
CO2: Interrelate applications of information technology
CO3: Compare various decision making systems
CO4: Cover broad range of issues from b2c , b2b and c2c
CO5: Expose the awareness of m commerce applications

Software Engineering

CO1: Define Software Engineering and how to apply the software engineering lifecycle by demonstrating competence in planning, analysis, design, implementation and maintenance..
CO2: Explains about Software Requirement and Specifications (SRS) and classifies the various Software Architectures.
CO3: Explains about Software Requirement and Specifications (SRS) and classifies the various Software Architectures.
CO4: Analyzes the various programming principles and guidelines and Compares the Testing techniques
CO5: Analyzes the various programming principles and guidelines and Compares the Testing techniques

Database Management Systems

CO1: Represent logical database using Entity Relationship and Enhanced ER model.
CO2: Formulate database using relational algebra and organize relation using normalization
CO3: Design SQL queries and implements PL/SQL.
CO4: Classify the storage and file structure, storage access, indexing and hashing techniques of the database.
CO5: Explain the concept of Transactions, recovery system and concurrency control

Design and Analysis of Algorithms

CO1: Define Elementary data structures
CO2: Explaining divide and conquer, greedy methods with examples
CO3: Explaining dynamic programing and traversals
CO4: Explaining back tacking and branch and bound
CO5: Analysis of NP-Hard and NP-Complete problems

Object Oriented Principles using Java

CO1: Explain the benefits of JAVA's compared to other Programming Language. The student will be able to identify classes, objects, Interfaces. The student will be able to **demonstrate** the concepts of polymorphism and inheritance
CO2: Create Java programs to implement error handling techniques using exception handling and Multi-Threading concepts
CO3: Identify usage of collection framework.

CO4: Distinguish different Byte Streams and Character Streams.
CO5: construct applets and JDBC programs

Distributed Systems

CO1: Defines Distributed systems, goals, processes and identifies the advantages and challenges in designing distributed algorithms for different primitives like mutual exclusion, deadlock detection, agreement, etc.
CO2: Explains about Name entities and illustrates the various synchronization algorithms
CO3: Differentiate between different types of faults and fault handling techniques in order to implement fault tolerant systems.
CO4: Compares the various Distributed Object Systems along with their related Case studies.
CO5: Constructs the algorithms related to Distributed Shared memory and Distributed Scheduling.

Data Warehousing and Data Mining

CO1: To understand the concepts of data mining and its importance and FIM algorithms.
CO2: Analyze different classification and clustering methods using algorithms
CO3: Explain the data flow and the concepts of warehousing
CO4: Express how to build data marts and to learn about dimensional modeling.
CO5: Identify concepts of Extraction, Transformation and loading

Network Security

CO1: Identify the need for security, classical encryption techniques and acquire fundamental knowledge on Block cipher operations.
CO2: Apply Public Key Cryptographic Technique for securing messages
CO3: Use an appropriate message authentication codes and Digital signatures
CO4: Explain distribution of public keys and Kerberos
CO5: Compare SSL ,TLS , electronic mail security and IP security

Advanced Java

CO1: Describe different AWT and Swings Classes. Students can design GUI based applications.
CO2: Describe different AWT and Swings Classes. Students can design GUI based applications.
CO3: Describe different AWT and Swings Classes. Students can design GUI based applications.
CO4: Design applications based on MVC architecture using EJB. Student can identify different Enterprise Java Beans
CO5: Compare Servlet and JSP features and can design Presentation logic.

Web Technologies

CO1: Define css collections and events
CO2: Demonstrate XML and AJAX
CO3: Explain basics of PHP
CO4: Selecting the database connections
CO5: Explain Advanced oops concepts with PHP.

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Software Testing

CO1: Express importance of testing in software development process, glass-box testing, black-box testing, and how to report and analyze bugs
CO2: Design different types of test case
CO3: Organize how to build testing strategy, establishing software testing methodology and software testing techniques.
CO4: Identify the definition of quality, metrics for software quality and inspection techniques.
CO5: Explain software configuration management, software reengineering and software restructuring techniques.

Big Data Analytics

CO1: Describe different AWT and Swings Classes. Students can design GUI based applications.
CO2: Develop web based applications using servlets.
CO3: Compare Servlet and JSP features and can design Presentation logic.
CO4: Compare Servlet and JSP features and can design Presentation logic.
CO5: Compare Servlet and JSP features and can design Presentation logic.

Semantic Web and Social Networks

CO1: Defines Distributed systems, goals, processes and identifies the advantages and challenges in designing distributed algorithms for different primitives like mutual exclusion, deadlock detection,agreement,etc.
CO2: Explains about Name entities and illustrates the various synchronization algorithms
CO3: Differentiate between different types of faults and fault handling techniques in order to implement fault tolerant systems.
CO4: Compares the various Distributed Object Systems along with their related Case studies.
CO5: Constructs the algorithms related to Distributed Shared memory and Distributed Scheduling.

Python & R Programming

CO1: Understand the basic concepts of Python objects and control structures.
CO2: Explain Python functions, modulus, packages and exceptions and develop programs using object oriented programming
CO3: Demonstrate file handling and database Programming. Apply Python for Data Analytics.
CO4: Understand basic concept of R and demonstrate programming concepts and data structures in R.
CO5: Choose an appropriate graphic for analysis and analyze data using summary statistics. Choose the type of regression based on data set.

Object Oriented System Development

CO1: Describing the basic concepts of modeling.
CO2: Explanation of Basic and Advanced Behavioral Modeling
CO3: Explanation of Architectural Modeling and creation of UML diagrams
CO4: Applications of UML Unified Software Development Process
CO5: Applications of UML Core workflows.

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M.Sc Organic Chemistry

Program Specific Outcomes

PSO1: **Understands, identify and interrelate** with the background of organic reaction mechanisms, complex Stereo chemical structures, molecular rearrangements, instrumental method of chemical analysis and separation techniques

PSO2: **Analyses** the importance of various elements in the periodic table, coordination chemistry and structure of molecules, properties of compounds, and structural determination of complexes using theories.

PSO3: **Gathers attention** about the physical aspects of atomic structure, dual behaviour, reaction pathways with respect to time, various energy transformations, molecular assembly in Nano level, electrochemistry &**infer** their significance

PSO4: **Learns, constructs and analyses** the potential uses of analytical techniques, medicinal chemistry and green chemistry.

PSO5: **Organise** and carry out experiments in the area of organic analysis,estimation,separation,derivative process, preparation,conductometric, potentiometric and solve spectral analysis

Inorganic Chemistry-I

CO1: **Understands** the concept of bonding in metal complexes

CO2: **Interrelates** 3-D structures of molecules with their symmetry elements

CO3: **Categorises** the mechanisms of inorganic complexes

CO4: **Analyses** the stability of the complexes through equilibria

CO5: **Identifies** the ligational aspects of diatomic molecules

Organic Chemistry-I

CO1: **Acquires** the 3-D aspects of organic molecules

CO2: **Understands** and **compares** the organic reaction mechanisms

CO3: **Develops** the fundamentals of reactive intermediates

CO4: **Appreciates** the various steps involved in the molecular rearrangements

CO5: **Perceives** the concept of conformational analysis

Physical Chemistry-I

CO1: **Learns** the classical status of thermodynamics

CO2: **Recognises** the dynamics of electrode reactions

CO3: **Perceives** the postulates of quantum chemistry

CO4: **Analyses** the importance of rates of chemical reactions

CO5: **Gains the potential** on concepts of photochemical reactions

Analytical Techniques &Spectroscopy-I

CO1: **Recognises** the importance of various chromatographic techniques

CO2: **Understands** the magnetic properties of nuclei

CO3: **Analyses** the approach of IR and Raman spectra for structural elucidation

CO4: **Identifies** the electronic transitions in organic molecules

CO5: **Gains** knowledge about electronic spin spectroscopy

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Inorganic Chemistry-II

CO1: **Perceives understanding** about terms, term symbols and microstates
CO2: **Enlights** the knowledge about higher pointgroups
CO3: **Analyses** the reaction pathways of complex formation
CO4: **Learn** the structural patterns of metal clusters
CO5: **Validate** the role of bioinorganic chemistry in everyday life

Organic Chemistry-II

CO1: **Develops** an understanding about organic reaction mechanisms
CO2: **Appreciates** the fundamentals of pericyclic reactions
CO3: **Apply** the theories of pericyclics to molecular reactions
CO4: **Understands** the importance of photochemistry
CO5: **Gains** the **potential** of organic reagents

Physical Chemistry-II

CO1: **Appreciates** the fundamentals of molecular thermodynamics
CO2: **Recognises** the various electrochemical reactions
CO3: **Applies** the wave mechanics for determining atomic structures
CO4: **Understands** the importance of quantitative mechanics in electronic filling
CO5: **Visualises** the macromolecular strucutres

Analytical Techniques &Spectroscopy-II

CO1: **Summarises** the concepts of hyphenated techniques
CO2: **Distinguish** and identify first and non-first NMR spectra
CO3: **Gain knowledge** about mass spectrometry
CO4: **Analyse** the chemical structure using mass fragmentation
CO5: **Validates** the structure of molecular ions through PES

Organic Chemistry-III

CO1: **Perceives** the concept of conformational analysis
CO2: **Analyses** the cruciality of stereochemical process
CO3: **Classify** and interrelates types of asymmetric synthesis
CO4: **Understands** and formulates retrosynthesis
CO5: **Learns** new techniques and concepts in organic synthesis

Organic Chemistry-IV

CO1: **Appreciate** the importance of protecting groups
CO2: **Gains** the potential of organic reagents in synthesis
CO3: **Enlights** the knowledge about new synthetic reactions
CO4: **Determines** the chemical environment of ^{13}C in organic molecules
CO5: **Analyses** the chemical structure using 2D NMR and ORD

Natural Products

CO1: **Understands** the importance of natural products

CO2: **Determines** the structure of alkaloids by chemical methods
CO3: **Analyses** the complex structure of steroids and hormones
CO4: **Acquires** the knowledge of prostaglandins
CO5: **Recognises** the Biosynthetic pathways

Bioorganic Chemistry

CO1: **Appreciate** the importance of carbohydrates and proteins
CO2: **Visualises** the role of nucleic acids and lipids
CO3: **Categorises** enzymes and their action
CO4: **Identifies** the enzyme models and their transformations
CO5: **Perceives** the concept of coenzymes

Heterocyclic Chemistry

CO1: **Understands** the background of heterocyclics
CO2: **Compares** the reactivity of aromatic and nonaromatic heterocyclics
CO3: **Differentiate** five and six membered heterocyclics
CO4: **Distinguish** heterocyclics with more than two heteroatoms
CO5: **Recognises** the large ring and other heterocyclics

Green Chemistry

CO1: **Learns** the basics of green chemistry
CO2: **Understand** the use of ultrasounds and microwave in organic synthesis
CO3: **Appreciates** the importance of solid free synthesis
CO4: **Perceives** the concept of phase transfer catalysis and crown ethers
CO5: **Gains** knowledge about multicomponent reactions

Organic Chemistry-V

CO1: **Gains** knowledge about principle of drug design and discovery
CO2: **Appreciates** the role of SAR and QSAR studies
CO3: **Infers** about drugs acting on metabolic processes
CO4: **Identifies** drugs acting on ion channels and receptors
CO5: **Analyses**importance of drugs acting on genetic material

Analytical Methods

CO1: **Perceives** the concepts the GC and HPLC
CO2: **Validates** the role of hyphenated techniques
CO3: **Understands** the importance of electro analytical methods
CO4: **Analyses** the chemical structure of Uv-visible spectroscopy
CO5: **Determines** the chemical environment of ^{1}HNMR spectroscopy

Nano & Polymer Chemistry

CO1: **Gains** knowledge about basics of nanochemistry
CO2: **Understands** the applications of nanomaterials
CO3: **Determines** the various uses of polymers
CO4: **Learns** the basics of green chemistry

CO5: **Validates** the adverse effects of chemicals on environment

M.Sc. Food Technology

Technology of Food Processing & Preservation

CO1: **Distinguish** various high temperature food preservation techniques
CO2: **Classify** various low temperature food preservation techniques
CO3: **Explain** the types and functions of Food Additives
CO4: **Distinguish** various pressure activated membrane technologies
CO5: **Differentiate** new techniques of food Preservation

Food Process Engineering-1

CO1: **Explain** the Basic Principles of Material Balances
CO2: **Explain** the Basic Principles of Energy Balances and Heat properties
CO3: **Analyse** the concept of Thermodynamics
CO4: **Judge** the changes in thermodynamic properties associated with work and heat
CO5: **Distinguish** various Rheological & Colligative properties of food materials

Technology of Animal Based Food Products

CO1: **Design** the layout of poultry processing and its maintenance
CO2: **Identify** the various sources of red meat and its processing procedures
CO3: **Identify** the various sea foods and its preservation techniques
CO4: **Describe** the dairy processing & quality evaluation techniques
CO5: **Recognize** the different types of dairy products

Advance Food Chemistry

CO1: **Classify** physicochemical properties of carbohydrates and proteins
CO2: **Explain** the effect of processing on lipids – understand
CO3: **Analyse** the minor food constituent changes during storage and processing
CO4: **Distinguish** different food additives and their uses
CO5: **Explain** the digestion, absorption and metabolism of nutrients in human system

Food Microbiology

CO1: **Identify** various classifications and biochemical changes related to microorganisms
CO2: **Judge** the Contamination and spoilage of perishable food commodities
CO3: **Categorize** various food borne infections and hygiene-sanitation control practices
CO4: **Distinguish** qualitative and quantitative assay for detection and characterization of microorganisms
CO5: **Generalize** microbial fermentation in Food Industry

Post-Harvest Technology of Plantation crops

CO1: **Identify** various classifications and biochemical changes related to microorganisms
CO2: **Judge** the Contamination and spoilage of perishable food commodities
CO3: **Categorize** various food borne infections and hygiene-sanitation control practices
CO4: **Distinguish** qualitative and quantitative assay for detection and characterization of microorganisms

CO5: **Generalize** microbial fermentation in Food Industry

Technology of Cereals

CO1: **Explain** the criteria of wheat flour quality and dough rheology
CO2: **Classify** the structure and composition of corn grain
CO3: **Categorize** the types of rice milling and factors affecting rice yield during milling
CO4: **Distinguish** between different parboiling methods of rice
CO5: **Compare** different convenience foods of rice

Food Process Engineering-Ii

CO1: **Explain** the concept of Fluid Dynamics
CO2: **Analyse** the heat and Mass transfer process during dehydration
CO3: **Solve** steady state heat transfer calculations
CO4: **Demonstrate** heat exchanger equipment's and **explain** heat transfer equations
CO5: **Use** Physical separation process and material handling equipment

Instrumental Methods of Food Analysis

CO1: **Explain** the calibration and standardization of different instruments
CO2: **Analyse** different sectroscopic and Refracto metric techniques
CO3: **Distinguish** various microscopic techniques in food analysis
CO4: **Distinguish** various chromatographic techniques in food analysis
CO5: **Generalize** various Separation techniques in food analysis

Milling & Baking Technology

CO1: **Explain** the processing of various cereals
CO2: **Explain** the processing of various Pulses
CO3: **Generalize** production, processing and manufacturing of value-added product
CO4: **Distinguish** various concepts of Baking Technology
CO5: **Demonstrate** various methods for manufacturing of bakery products

Technology of Food Fermentation

CO1: **Explain** various types fermented foods
CO2: **Classify** types of beverages
CO3: **Categorize** packaging, storage and quality evaluation of various Fruit Beverages
CO4: **Distinguish** storage and quality characteristics of Synthetic beverages
CO5: **Interrelate** the equipment's used for brewing and distillation of Fermented Beverages

Technology of Sugar Confectionery and Chocolate Processing

CO1: **Describe** the general technical aspects of confectionery and its raw materials
CO2: **Identify** the Manufacturing practices of flour
CO3: **Identify** the Manufacturing practices of sugar confectionery products
CO4: **Identify** the Manufacturing practices of Fruit confectionery products
CO5: **Explain** the chocolate processing technology

Extrusion Technology

CO1: **Describe** the processing technology of Single screw extruder
CO2: **Distinguish** the types of extruders used in different food processing unit

CO3: **Categorize** the processing methods into pre and post extrusion
CO4: **Identify** the Manufacturing practices of Breakfast Cereals and TVP
CO5: **Explain** the Manufacturing of different extruded Snack food

Advances in Food Packaging

CO1: **Identify** various packaging requirements and selection of packaging materials on the basis of food type
CO2: **Categorize** Active and intelligent packaging techniques
CO3: **Generalize** Packaging-flavour interactions and novel applications in active packaging
CO4: **Identify** Green plastics for food packaging as Modern packaging systems
CO5: **Analyse** Shelf life of processed and packaged foods

Food Quality Systems and Management

CO1: **Identify** various quality attributes- physical, chemical, nutritional and microbial
CO2: **Explain** Computer-aided sensory evaluation procedures for food & beverages
CO3: **Categorize** concepts of Quality Control, Quality Assurance and Total Quality Management
CO4: **Categorize** various organizations dealing with inspection, traceability, authentication certifications and quality assurance
CO5: **Distinguish** Global Food Safety Standards and Export import policy and documentation

Energy Conservation & Auditing

CO1: **Identify** basic principles & fundamentals of energy conservation
CO2: **Explain** energy conservation in thermal utilities
CO3: **Apply** Energy management & auditing
CO4: **Interrelate** and match energy usage to requirement
CO5: **Generalize** energy monitoring and targeting

Food and Nutrition

CO1: **Explain** all concepts of Nutrition & Nutrients
CO2: **Identify** various Vitamins & Minerals in food
CO3: **Classify** the concepts of Food Energy & Recommended daily allowances
CO4: **Generalize** the Nutritional Status as programs to combat malnutrition of deficiency disorders
CO5: **Distinguish** various Supplementary Foods & Novel Foods

Technology Of Food Preservation & Processing

CO1: **Explain** all concepts of High Temperature Processing
CO2: **Explain** all concepts of Low Temperature Processing

CO3: **Classify** different membrane technologies related to pressure activated membrane processes
CO4: **Generalize** the concept of Food Additive usage & Fermentation processes
CO5: **Distinguish** various techniques in food processing & preservation

Food Laws, Regulations & Standards

CO1: **Explain** all concepts of food safety and standards and food safety strategies
CO2: **Apply** concepts related to prevention and control of microbiological and chemical hazards.
CO3: **Classify** different Indian Food Regulatory Regimes
CO4: **Judge various** International Food Standards
CO5: **Distinguish** various Voluntary National Food Standards and Nutritional Labelling

Food Toxicology and Allergens

CO1: **Explain** all concept of Allergens and microbiological, nutritional and environmental Hazards
CO2: **Classify** different Food allergy and sensitivity related to food
CO3: **Judge** various natural food toxicants & biological factors that influence toxicity
CO4: **Distinguish** various Quantitative and qualitative analysis of toxicants in foods
CO5: **Classify** various toxicants formed during food processing & storage

Food Supply & Cold Chain Management

CO1: **Illustrate** the importance of cold chain in food processing industry
CO2: **Express** functions in cold storages - retail supermarket cold chain & display systems
CO3: **Generalize** various temperature recording devices used during transport for documentation and traceability
CO4: **Explain** Supply chain inventory management
CO5: **Classify** Internet technologies and electronic commerce

MBA

Program Outcomes

PO1: Managerial Skills: Apply knowledge of management theories and practices to solve business problems.
PO2: **Decision making Skills**: Foster Analytical and critical thinking abilities for data-based decision making.

PO3: **Ethics**: Ability to develop Value based Leadership ability.
PO4: **Communication Skills**: Ability to understand, analyze and communicate global, economic, legal, and ethical aspects of business
PO5: **Leadership Skills**: Ability to lead themselves and others in the achievement of organizational goals, contributing effectively to a team environment.
PO6: **Entrepreneurial Skills**: Ability to demonstrate the skills and appraise affairs related to entrepreneurship and develop as entrepreneurs.
PO7: **Strategic analysis**: To conduct strategic analysis using theoretical and practical applications.
PO8: **Cogent Skills**: To manage intra and inter organizational negotiations effectively in a cross cultural business environment.

Program Specific Outcomes

PSO1: Professional Skills: Able to utilize the knowledge of management practices in innovative, dynamic and challenging environment in the organizations.
PSO2: Creativity: Create value through identifying customer needs and implementing integrated production and distribution of goods, services
PSO3: Problem-Solving Skills: Can develop capacity to adapt and innovative to solve problems, to cope with unforeseen events and to manage in unpredictable environments.
PSO4: Successful Career and Entrepreneurship: An understanding of social awareness and environmental wisdom along with ethical responsibility to have a successful career and to sustain passion and zeal for real world applications using optimal resources as an Entrepreneur.

Course Outcomes

Communicative Competence

CO1: Apply effective communication and listening strategies in various formal scenarios.
CO2: Classify different types of communication.
CO3: Express language correctly to communicate appropriately.
CO4: Define different means of communication.
CO5: State different management communication.

Management and Organization Behavior

CO1: Understand the concept and process of management and organization behaviour.
CO2: Examine the historical roots of contemporary management practices.
CO3: Able to understand concept, nature of perception.
CO4: Analyse the traditional and contemporary organizational designs and its structures.
CO5: Know the various theories of motivation and leadership.

Information Technology Applications For Management

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CO1: Apply IT concepts from business perspective
CO2: Define different devices and software used in management.
CO3: Use IT Applications for Management**.**
CO4: Explain different input and output devices.
CO5: Describe different information systems used in management.

Information Technology -Lab

CO1: Apply IT concepts from business perspective
CO2: Define different devices and software used in management.
CO3: Use IT Applications for Management**.**
CO4: Explain different input and output devices.
CO5: Describe different information systems used in management.

Managerial Economics

CO1: Understand micro economic environment, effective managerial decision-making process
CO2: Understand of the theory and analytical tools that can be used in decision-making problems.
CO3: Analyze Production and cost concepts
CO4: Market structures and the price determination
CO5: Formulate them into a managerial model to which decision making tools can be applied.

Financial Accounting and Analysis

CO1: Define financial accounting and accounting equations
CO2: Construction of balance sheet
CO3: Use of depreciation methods and valuation methods
CO4: Analyse financial statements and financial ratios
CO5: Explain fund flow and cash flow statements

Statistics for Management

CO1: Describe about probability and statistical tools.
CO2: Explain basic concepts of probability
CO3: Explain the distributions of probability.
CO4: Analyze different types of sampling methods and large sample test.
CO5: Formulate small sample test.

Principles of Marketing

CO1: Understand various facets of market, and its behavior.
CO2: Apply the various tools for making strategies in the markets
CO3: Create a marketing mix to bring sustainable profits
CO4: Construct the promotional tools for marketing a product. the
CO5: Analyze the various situations and stages in buying process.

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Business Law and Ethics

CO1: Understand about self, strengths and weakness.
CO2: Identify ones potential, self-image, and skills
CO3: To analyze the various thinking process
CO4: To develop life coping strategies
CO5: To develop problem solving and decision making in life situations.

Value Education and Personality Development

CO1: Understand about self, strengths and weakness.
CO2: Identify ones potential, self-image, and skills
CO3: To analyze the various thinking process
CO4: To develop life coping strategies
CO5: To develop problem solving and decision making in life situations.

Human Resource Management

CO1: Understand HRM in the global perspective and as a strategic business partner
CO2: Know more about how to acquire manpower , the selection process and the training process
CO3: Understand career in the holistic perspective
CO4: Understand the difference in mentoring and coaching
CO5: Contemporary issues in talent management, the competence levels of employees

Economic Environment & Policy

CO1: Able to understand the concept of economic environment and its impact on economy.
CO2: Know the nature and scope of business environment.
CO3: Examine the various theories of income and employment.
CO4: Know the concept of inflation, theories and its causes.
CO5: Understand the evolution and structure of Indian Financial System.

Financial Management

CO1: Define financial functions and goals
CO2: Use project evaluation techniques and approaches
CO3: Analyse capital structure
CO4: Apply dividend policies and decisions
CO5: Explain working capital financing

Quantitative Methods for Decision Making

CO1: Describe various quantitative techniques and tools that help in decision making in different functional areas in industries.
CO2: Formulate concepts of linear and nonlinear Programming problems using different methods.
CO3: Solve linear programming problems using Simplex method and the concepts of Transportation problem and assignment problems.

CO4: Construct the concepts of CPM and PERT.
CO5: Explain the concepts of queuing theory, game theory and simulation.

Marketing Research
CO1: Formulate various marketing research projects
CO2: Identify various opportunities and solve problems in the market.
CO3: Understand fundamental marketing research concepts, theories and principles in areas of marketing policy;
CO4: Construct a questioner using scales of measurement
CO5: Solve non parametric tests for attitude measurement.

Operations Management
CO1: Define introduction to Operation Management.
CO2: Explain the role of operation management.
CO3: Organize the scheduling and control of production operations.
CO4: Identity quality control methods.
CO5: Describe materials management.

International Business
CO1: Able to understand and appreciate the international business environment.
CO2: Know the importance, emergence and drivers of globalization.
CO3: Understand the various stages and approaches in international business.
CO4: Examine the different levels, benefits of economic integration.
CO5: Know the structure and functions of WTO.

Soft Skills
CO1: Understand the importance of goal setting and set goals
CO2: Plan the time for a given schedule and life.
CO3: Apply the etiquette to impress and give good impression.
CO4: Develop group discussion skills
CO5: Prepare for interviews

Entrepreneurship Development
CO1: Explain the concepts and trends of development in entrepreneurship
CO2: Define about the concept of evolution of entrepreneur.
CO3: explain various factors affecting entrepreneurial growth.
CO4: Describe how to prepare a business plan.
CO5: Identity the concept of venture capital financing and angel investors.

Financial Services
CO1: Describe innovative financial products and services and their scope in global finance market.
CO2: Define merchant banking.
CO3: Explain hire purchase and leasing.
CO4: Distinguish discounting, types of factoring and forfeiting.
CO5: List credit rating agencies and credit cards.

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Total Quality Management

CO1: Know the importance of quality, concept of total quality management.
CO2: Able to understand the different techniques used to ensure quality in an organization.
CO3: Understand the various measurement tools, analytical tools and control tools to check the quality.
CO4: Analyse the quantitative techniques and qualitative techniques of TQM.
CO5: Examine the importance of six sigma in an organization.

Supply Chain Management

CO1: Know the importance of quality, concept of total quality management.
CO2: Able to understand the different techniques used to ensure quality in an organization.
CO3: Understand the various measurement tools, analytical tools and control tools to check the quality.
CO4: Analyse the quantitative techniques and qualitative techniques of TQM.
CO5: Examine the importance of six sigma in an organization.

Strategic Management

CO1: Able to understand the steps involved in strategic management process.
CO2: Know the significance and framework for industry analysis.
CO3: Analyse the importance of balance score card and different types of strategies used at corporate and business level.
CO4: Understand the various activities, benefits, growth and drivers of outsourcing.
CO5: Examine the various stages involved in the industry lifecycle.

Financial Risk Management

CO1: Interrelate the risk and tools and techniques of risk management.
CO2: Define introduction to risk management.
CO3: Describe measurement and management of risk using derivatives.
CO4: Explain types of derivatives.
CO5: Classify types of SWAPS.

Compensation Management

CO1: Understand the compensation context and the system to design packages
CO2: Differentiate the traditional and modern pay packages
CO3: Establish pay plans with HR strategy and business strategy
CO4: Design competitive systems with internal and external equity
CO5: Labour legislations in designing the application of the compensation systems

Product and Brand Management

CO1: Develop a product policy
CO2: Understand various theories on product lifecycle
CO3: Apply the theories to develop a new product
CO4: Organize the products in various perception maps for segmentation and new product creation.

CO5: Developing a launching of product

Investment management
CO1: Define fundamentals of fundamental management
CO2: Explain bond valuation techniques
CO3: Construct portfolio risk and return
CO4: Identify over-priced and under priced securities
CO5: Analyse fixed income securities

Organizational development
CO1: Understand the problem solving approach at the organization level
CO2: Will know the importance of values and beliefs systems of the organization
CO3: Different theories of change and models
CO4: Develop interventions to evaluate OD programs
CO5: Concept of Team and the organizational confrontation approaches

Integrated Marketing Communications
CO1: Prepare a promotional plan
CO2: To differentiate the response process among consumers.
CO3: Design a advertising strategy
CO4: Apply the personal selling process.
CO5: Understand various sales promotion tools.

International Finance
CO1: Define international financial system
CO2: Analyse foreign exchange market
CO3: Identify risk management in multinational corporations
CO4: Determine international money markets
CO5: Explain risk management in multinational corporations.

Performance & Knowledge Management
CO1: Understand the performance management systems in the organization
CO2: Different appraisals methods prevalent in the industry
CO3: Know more about performance reviews and improvement strategies
CO4: Benchmarking and how competitors have their performance management systems
CO5: Competency assessment of individuals

Consumer Behavior
CO1: Analyze the impact of consumer personality and motivation on purchase behavior.
CO2: Analyze learning principles in marketing
CO3: Understand the lifecycle influence on purchase behavior.
CO4: To distinguish the consumer decision making process.
CO5: To classify the behavior of consumers based on constructs.

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Cost & Management Accounting

CO1: Formulate the various objectives of cost control techniques
CO2: Use control techniques and management
CO3: Analyse standard costing and variance
CO4: Evaluate strategic phrases
CO5: Explain activity based costing methods

Leadership & Change Management

CO1: Examine the purpose of leadership development
CO2: Leadership development through company run programs
CO3: Understand the empowerment programs and mentoring programs
CO4: Change concepts and the perspectives of change
CO5: Contemporary models of change management

Services & Retail Marketing

CO1: Understand the service sector, its customers
CO2: Distinguish the service marketing mix
CO3: Create strategies to overcome 4Is of services
CO4: Understand the factors influencing retail
CO5: Formulate strategies for a successful retail outlet.

M. Sc. Biotechnology

Programme Outcomes

PO1: Scientific Knowledge. Apply the knowledge of Science, Mathematics, Engineering& Technology fundamentals to solve the complex problems**.**

PO2:.Design/development of solutions: Design solutions for complex engineering problems and design system components or processes that meet the specified needs with appropriate consideration for the public health and safety, and the cultural, societal, and environmental considerations.

PO3: Problem analysis: Identify, formulate, research literature, and analyze complex scientific problems reaching substantiated conclusions using first principles of mathematics, natural sciences, and engineering sciences.

PO4: Modern tool usage: Create, select and apply appropriate techniques, resources, modern technology and IT tools to complex science and technological activities.

PO5: Environment and sustainability: Understand the impact of professional science and technological solutions in societal and environmental contexts and for sustainable development.

PO6: Individual and team work: Function objectively as an individual and as a member in diverse teams.

PO7: Communication: Communicate effectively on complex science & technology activities with society at large and able to write effective reports and documentation.

PO8: Life-long learning: Recognise the need and ability to engage in independent and lifelong learning in the context of technological change.

Programme Specific Outcomes:

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PSO1: Students will gain and apply knowledge of Biotechnology comprised of science and Engineering components to solve problems related to field of biotechnology.
PSO2: Students will be able to design, perform experiments, analyze and interpret data for investigating complex problems in the area of biotechnology
PSO3: Post Graduate students will be able to decide and apply appropriate tools and techniques in biotechnological manipulation.
PSO4: Post Graduate students will be able to justify societal, health, safety and legal issues and understand his responsibilities in biotechnological engineering practices.
PSO5: Post Graduates will be able to understand the need and impact of biotechnological solutions on environment and societal context keeping in view need for sustainable solution.
PSO6: Post Graduates will be able to undertake any responsibility as an individual and as a team in a multidisciplinary/ cross cultural environment
PSO7: Post Graduates Students will develop oral and written communication skills.

Genetics

CO1: Explains the basics of genetics, Mendel's laws and dominance-recessive relationships
CO2: Gives detailed information about chromosomes and pedigree analysis in man
CO3: Explains the variations in chromosomal structure and numbers
CO4: Describes linkage and gene mapping concepts
CO5: Clearly gives information about Organellar inheritance in contrast to Mendelian inheritance

Cell Biology

CO1: Structures and purposes of basic components of prokaryotic and eukaryotic cells, especially membranes, and organelles.
CO2: How the cellular components are used in protein sorting through various pathways.
CO3: How Cell Signalling Works and how cells will communicate with the surrounding cells & can have a clear understanding of the signal
CO4: Cellular components underlying mitotic cell division
CO5: The knowledge how the cells undergo apoptosis and its applications

Biochemistry

CO1: Explains Chemical bonds, molecular interactions in cell
CO2: Apply the knowledge of bonds &shows in representing structure of carbohydrates
CO3: Identifies the structure of lipids, relates &distinguishes with carbohydrates.
CO4: Compares, discriminates the structure &functional relationship of proteins & nucleic acids with
other biomolecules in cell.
CO5: Explains the catalytic nature & kinetic properties &inhibition mechanisms of enzymes.

Microbiology

CO1: Explains the basics of Microbiology. Different media used for their culturing and their identification methods

CO2: Gives detailed information about systemic classification of Bacteria, Algae, Archae and Fungi
CO3: Explains in detail about microbial physiology and their growth
CO4: Describes about microbial genetics like Transformation, Transduction, and recombination
CO5: Clearly gives information about classification of viruses and chemotherapeutic agents

Immunology
CO1: Explains the basics of immunology
CO2: Gives detailed information about antigens and their pathways
CO3: It gives knowledge about various types of Imunoglobulin structures their and functions
CO4: explains about Organization of MHC complex and Transplantation
CO5: Summarizes about cell mediated and humoral responses and auto immune diseases

Molecular Biology
CO1: Know the life with molecular functionalities, chemical and molecular processes that occur in and between cells.
CO2: Knowledge about the changes or losses in cell function, includes alterations of cell function brought about by mutations and DNA repair
CO3: Concept of gene structure and function, gene expression and gene regulation at transcriptional level.
CO4: Concepts of translation and gene expression and gene regulation at translational level.
CO5: How genes are evolved by gene rearrangements and recombination and by transposons. Development of solid foundation and requisite research aptitude for further higher studies on epigenetic analysis

r- DNA Technology
CO1: Explains usage of enzymes in molecular cloning
CO2: Apply the principles of Vectors used in molecular cloning
CO3: Illustrates Construction of Genomic and cDNA Libraries
CO4: Describes Techniques employed in molecular cloning
CO5: Relates Selection and Analysis of recombinant Clones

Biochemical Techniques
CO1: Explains different types of chromatography
CO2: Explains different types of electrophoresis.
CO3: Identifies separation of cell organelles,biomolecules by different centrifugation techniques.
CO4: Identifies& applies,the colorometry&sphectrophotometry to detect biomolecules..
CO5: Explains the application of radioisotopes in various metabolicstudies

Plant Biotechnology
CO1: Use protocols for preparation of Culture Media, Cell Culture and Micro Propagation
CO2: It relates the techniques used for Protoplast Culture and Soma clonal Variations in Plants
CO3: It evaluates Production of Commercially Useful Compounds By Cell Cultures
CO4: This study differentiate between Molecular Mechanisms of Abiotic & Biotic Stress Tolerance in

plants

CO5: It explains Transformation Techniques in Transgenic Plants

Animal and Medical Biotechnology

CO1: The basics of maintainence of mammalian cell and generation of cell line using proper sterile techniques and optimum conditions of growth to develop mamalian cells.

CO2: To identify and comprehend experimental knowhow of various techniques involved in cell separation and quantitation using latest technology also know how to relate and evaluate the applications of animal biotechnology ln gene therapy, animal breeding, cloning.

CO3: The knowledge to know about the stem cell technology and regenerative Medicine.

CO4: How genetic disorders are arising

CO5: Knowledge regarding various therapeutics, DNA based Vaccine, gene products in medicine and healthcare.

Bioinformatics

CO1: It summarizes foundations of Bioinformatics

CO2: To explains methods for Comparison and evaluation of data

CO3: Analysis of Genomic Applications of Bioinformatics

CO4: Analysis of Proteomic Applications of Bioinformatics

CO5: It summarise Applications of Bioinformatics

Fermentation Technology

CO1: Explains the Process of fermentation.

CO2: Summarizes the different types of designs of fermentors and operations.

CO3: Identifies& relates microbiological and the fermentation media, illustrates the principles of upstream process of fermentation

CO4: Compares, discriminates the product isolation with product purification methods. Explains & nterpretes the product purification strategies

CO5: Evaluates, relates the principles of upstream &downstream process of fermentation in different fermentative productions

Biostatistics, Ethical Issues & Research Methodology

CO1: Introduction to Bio-Statistics

CO2: Descriptive Statistics & Probability Distribution

CO3: Statistical Inference of Qualitative & Quantitative Variables

CO4: It describes importance of ethics in life. It valuates good laboratory and manufacturing practices.

CO5: Integrates training from different sources to solve a problem during research and writing a publication

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Food Biotechnology

CO1: Explains the nutrients present in diet & aspects of food different food additives.
CO2: Summarizes the different methods of food preservation & processing
CO3: Identifies the nutrients in functional foods, relates &distinguishes bioactive compounds role in
functional foods.
CO4: Compares, discriminates the GM Foods with functional foods. Explains & interprets the safety of
GM foods with traditional foods.
CO5: Evaluates, relates the principles of food preservation & processing in food safety

Nano-Biotechnology

CO1: Explains new horizons of science by fundamental study of Nanotechnology
CO2: It extends Nanotechnology different areas and its utilization
CO3: Categorize different types of Nano Structures by their fundamental properties and utility in different areas
CO4: Support of Nano-biotechnology in Health Care
CO5: Summarizes the Applications of Nano-biotechnology

Bioelectronics

CO1: The basics electronic components involved in the applications of biology.
CO2: The similarities between electronic components and biologically active materials
CO3: Various types of Biosensors used in biology.
CO4: The applications of biosensors in various fields related to biology like health care, agriculture etc.
CO5: Knowledge about Bio inspired systems.

Basic Biotechnology

CO1: Explains the basics in Biotechnology
CO2: Gives detailed information about concepts in Genetics
CO3: Explains the basics in Microbiology
CO4: Describes concepts of Plant Biotechnology
CO5: Clearly gives information about applications of Biotechnology in various fields

M.Sc. Data Science

PROGRAM OBJECTIVES (POs)

PO1: Engage in continuous reflective leaning in the context of technology and scientific advancement.

PO2: Identify the need and scope of the Inter disciplinary area.

PO3: Understand the professional, ethical, and social responsibilities.

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PO4: Enhance disciplinary competency, employability, and leadership skills.

PROGRAM SPECIFIC OUTCOMES (PSOs)

PSO1: Abstract Thinking: Ability to understand the abstract concepts that lead to various data science theories in Mathematics, Statistics and Computer science.

PSO2: Problem Analysis and Design Ability: To identify analyze and design solutions for data science problems using fundamental principles of mathematics, Statistics, computing data sciences, and relevant domain disciplines.

PSO3: Modern software tool usage: Acquire the skills in handling data science programming tools towards problem solving and solution analysis for domain specific problems.

PSO4: Societal and Environmental Concern: Utilize the data science theories for societal and environmental concerns.

PSO5: Professional Ethics: Understand and commit to professional ethics and cyber regulation.

COURSE OUTCOMES(Cos)

FIRST YEAR (2020-21)

FIRST SEMESTER

COMMUNICATIVE COMPETENCE

- Student can apply the knowledge of communicative competence to express the ideas clearly

TECHNICAL SEMINAR AND REPORT WRITING

- The overall purpose or goal from participation in an educational activity for personal development and current trends in research.

MATHEMATICS FOR DATA SCIENCE

CO1: Construct mathematical arguments that relate to the study of introductory linear algebra.
CO2: Analyze finite and infinite dimensional vector spaces and subspaces over a field and their properties, including the basis structure of vector spaces.
CO3: Use the definition and properties of linear transformations and matrices of linear transformations and change of basis, including kernel, range and isomorphism.
CO4: Explain orthogonality on vector spaces and compute inner products and, including Gram-Schmidt orthogonalization.

CO5: Demonstrate knowledge and understanding of topics including, divisibility, prime numbers, congruence, Diophantine equations.

ARTIFICIAL INTELLIGENCE

CO1: Defines Artificial Intelligence, State Space, Production Systems
CO2: Explains about Heuristic Search Techniques and demonstrates about Knowledge Representation using Predicate Logic.
CO3: Differentiate between Procedural Knowledge versus Declarative Knowledge and explains about symbolic Reasoning under Uncertainty.
CO4: Compares the various Weak Slot Filler Structures and Strong Slot Filler Structures.
CO5: Constructs the algorithms related to Game Playing and Planning.

STATISTICS AND PROBABILITY

CO1: To examine different concepts of probability and apply them in real life applications.
CO2: To make use of different concepts of random variables in understanding scope of different distributions.
CO3: To utilize different concepts of expectations in understanding the characteristics of distributions.
CO4: To understand the relationships between different discrete distributions.
CO5: To explain the different characteristics of continuous distributions and understand which one to use for different cases.

PYTHON FOR DATA SCIENCE

CO1: Apply the concept of operators, variables, expressions, and statements.
CO2: Apply the concept of functions and recursive functions.
CO3: List the operations performed on strings and identify the differences between lists and dictionaries.
CO4: Explain Files, Modules, and Packages.
CO5: Apply the concepts of Inheritance and Polymorphism.

ADVANCED DATABASES

CO1: Design a data base for a system using E-R data model and Relational Data model.

CO2: Design logical database with all integrity constraints over relations.
CO3: Apply normalization steps in database design and removal of data anomalies.
CO4: Extend the characteristics of database transactions.
CO5: Distinguish the different types of NoSQL databases

DATA VISUALIZATION LAB

- Able to learn how to customize the data
- Able to understand how to extract the data

- Able to perform field operations and editing meta data
- Able to practice on worksheets
- Apply different functions and calculations
- Practices on different charts and histograms

PYTHON FOR DATA SCIENCE LAB

- Able to develop programs in Python.
- Able to implement functions using parameters.
- Understand the concept of expressions.
- Construct programs using Control structures
- List the operations that can be performed on strings.
- Identify the differences between lists and dictionaries.
- List the concepts of polymorphism.

ADVANCED DATABASES LAB

- Design and implement a database schema for a given problem-domain.
- Populate and query a database using SQL DML/DDL commands.
- Declare and enforce integrity constraints on a database
- Retrieve data using different SQL joins, subqueries, and correlated queries.
- Utilize the techniques used to create, insert, update, and delete data/documents.
- Utilize various techniques used to query the database.
- Utilize techniques to optimize querying using indexing.
- Apply methods to analyze data using aggregation techniques.
- Adopt knowledge about the role of NoSQL in business.
- Identify technique of splitting data across machines via sharding.

SECOND SEMESTER

HUMAN VALUES & PROFESSIONAL ETHICS

- The student will learn about the human values and professional ethics.

INDUSTRIAL PRACTICES

- Expose student to work, responsibility and the ethics in working environment.
- Communicate effectively within the working environment.
- Expose students to general and specific procedure of Data science field related to Industry
- Use the theoretical knowledge for solving the Industry problems.
- Application of preparation for their final year subjects, mini, major projects, and placement.

MANAGEMENT AND ORGANIZATIONAL BEHAVIOUR

CO1: Understand the concept and process of management and organization behavior.
CO2: Examine the historical roots of contemporary management practices.
CO3: Analyze the traditional and contemporary organizational designs and its structures.
CO4: Know the various theories of motivation and leadership.
CO5: Understand the organizational politics, conflict causes and consequences in work environment.

DATA STORAGE TECHNOLOGIES AND NETWORKING

CO1: Explain how to manage the capacity, performance, and reliability of large numbers of disks.
CO2: Learn how Intelligent Storage Systems provide highly optimized I/O processing capabilities.
CO3: Understands importance of NAS and identify how NAS improves the performance.
CO4: Compare object-based storage and unified based storage
CO5: Apply to organizations for an effective and cost-efficient disaster recovery and restart procedures in both physical and virtual environments.

DATA SECURITY AND PRIVACY

CO1: Apply the need of computer security.
CO2: Identify the differences between different types of ciphers.
CO3: Explain various features of digital signature.
CO4: Identify the differences between cryptographic hash functions.
CO5: Understand the features of steganography.

TIME SERIES ANALYSIS AND FORECASTING TECHNIQUES

CO1: Identifying linear, quadratic, Gompertz and Logistic models where appropriate and describe models for seasonal variation. Also explains the methods used to study cyclic components.
CO2: Estimate seasonal effects of time-series data by using Win ten's method, Brown's, Box – Jenkin's three-parameter exponential smoothing method.
CO3: To utilize AR, ARIMA models for time series data and to forecast the data using these models.
CO4: To interpret SARIMA model and criterion used to study them.
CO5: To explain and verify mathematical considerations for analysing time series, including concepts of stationarity, autocovariance, autocorrelation.

REGRESSION ANALYSIS AND INFERENTIAL STATISTICS

CO1: To explain the concepts of estimation and testing of hypothesis which used for drawing the statistical inference.
CO2: To apply the idea of sampling distributions of different statistics in testing of hypothesis.
CO3: To develop a deeper understanding of simple linear regression and test for the quality of its fit.
CO4: Interpret multiple linear regression model parameters and to understand the model selection.

CO5: To estimate the effect of outliers and to understand the concepts of non – linear regression.

DATA MINING

CO1: Implement basic concepts of data mining system
CO2: To apply the knowledge of data warehouse concepts for real world problems.
CO3: To develop business strategies.
CO4: To compare various supervised learning.
CO5: To compare various unsupervised learning.

MACHINE LEARNING

CO1: Define a well-posed learning problem.
CO2: Explain Linear Models
CO3: Illustrate the decision tree learning algorithm and hypothesis space search.
CO4: Apply K means Algorithm & Genetic algorithms in machine learning.
CO5: Explain Graphical Models

DATA ANALYTICS LAB

- Apply the concepts of graphical representation, descriptive statistics, correlation, and regression analysis tools for the statistical data. Demonstrate the concepts of point and interval estimation of unknown parameters and their significance using small samples. Apply the idea of sampling distributions of difference statistics in testing of hypotheses

DATA MINING LAB

- The student will learn how to solve correlation and regression problems using R.
- The student with existing datasets will do preprocessing of the data.
- The student will be able to apply various classification algorithms on the data sets by using R commands.
- The student will acquire knowledge about various clustering algorithms and its use.
- The student will come to know about fact and dimensional table and various operations on warehouse data.

MACHINE LEARNING LAB

- Learn to Load datasets.
- Learn about the various libraries offered by Python to manipulate, preprocess, and visualize data.
- Learn the technique to reduce the number of variables using Feature Selection and Feature Extraction.
- Learn in building models and model persistence using regression, classification.
- Learn various machine learning algorithms like KNN, Decision Trees, SVM, and Clustering in detail.

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SECOND YEAR (2021-22)

SOFT SKILLS

- The student will be able to develop effective communication skills, presentation skills, inter- personal skills, team management skills, and leadership skills.

MINI PROJECT

- The program prepares the students to take up positions as Systems Analysts, Systems Designers, Data scientist, Programmers and Project Managers in any field related to data science and analytics.

DEEP LEARNING

CO1: Learn the fundamental principles of deep learning.

CO2: Identify the deep learning algorithms for various types of learning tasks in various domains.

CO3: To explore Deep learning techniques and various feature extraction strategies.

CO4: To mathematically understand the deep learning approaches and paradigms.

CO5: Implement deep learning algorithms and solve real-world problems.

CLOUD COMPUTING

CO1: Illustrate the main concepts, features, challenges, and risks in cloud computing.

CO2: Describe virtualization of clusters and Data centres, virtual clusters, and resource management.

CO3: Identify the architectures over virtualized data centres.

CO4: Explain the core issues of cloud computing such as cloud security and trust management.

CO5: Compare various cloud programming and software environments.

SOCIAL MEDIA ANALYTICS

CO1: Identify various platforms in social media.
CO2: Understand processing of social media.
CO3: Compare differences between twitter and other social media networks.
CO4: Analyze Facebook information and write business cases.
CO5: Differentiate social media networks Instagram (i.e.,usage of instagram and data processing techniques also they will get idea)

MULTIVARIATE ANALYSIS AND STOCHASTIC PROCESS

CO1: Understand the basic concepts of multivariate distributions.
CO2: Summarize and interpret MANOVA techniques.
CO3: Understand the principles and characteristics of the multivariate data analysis techniques.
CO4: Describe a Markov chain and its transition matrix.
CO5: Determine the stationary distributions of a Markov chain.

INTERNET OF THINGS

CO1: **Identify** the importance of IOT and its applications.
CO2: **Differentiate** between IOT and M2M, SDN and NFV
CO3: **Apply** IOT design methodology.
CO4: **Understand** building of IOT devices and Raspberry PI.
CO5: **Explain** working of application of IOT

BIG DATA ANALYTICS

CO1: Able to understand the Big Data concepts in real time scenario.

CO2: Understand the architecture of Hadoop and apply map reduce concepts.

CO3: Understanding Hadoop YARN Architecture

CO4: Understand and exploring HIVE.

CO5: Analyzing Data with PIG

NATURAL LANGUAGE PROCESSING

CO1: Understand various approaches on syntax and semantics in NLP.

CO2: Apply various methods to discourse, generation, dialogue and summarization using NLP.

CO3: Analyze various methodologies used in Machine Translation, machine learning techniques used in NLP including unsupervised models and to analyze real time applications.

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INTERNET OF THINGS LAB

- To Implement IoT based Practical's.

BIG DATA ANALYTICS LAB

- Implement file management tasks in Hadoop.
- Apply Map Reduce Programs.
- Understand installation of PIG and PIG Latin Scripts

NATURAL LANGUAGE PROCESSING LAB

- Implement the methodologies used in Machine Translation, machine learning techniques used in NLP including unsupervised models and to analyze real time applications.

FOURTH SEMESTER

PROJECT

- The student will be able to describe Data Collection, Data Visualization, Labelling, Data Selection, Data Pre-processing, Data transformation, Model Training, Model evaluation, Model testing, Accuracy, and deployment.

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M.Sc. Food Science and Nutrition

BAKERY SCIENCE

Outcomes:

- Students gain knowledge about different baking techniques and processing of bakery products.

HUMAN PHYSIOLOGY

Outcomes:

- Understand the current state of knowledge about the functional organization of the human body.
- Develop insight of normal functioning of all the organ systems of the body and their interactions.
- Comprehend the pathophysiology of commonly occurring diseases.
- Correlate physiology with various disorders and their pathogenesis.

PRINCIPLES OF FOOD SCIENCE

Outcomes

- Understand the chemistry of food components like proteins, carbohydrates and lipids.
- Understand basic concepts of new food product development.
- Enable to learn about the food additives that are relevant to processed food industry for shelf life extension, processing aids and sensory appeal.

PRINCIPLES OF FOOD SCIENCE (Practical)

Outcomes

- Students will gain practical knowledge in determining and estimating chemical composition of various food components through chemical and instrumental analysis.

ADVANCED NUTRITIONAL BIOCHEMISTRY AND INSTRUMENTATION

Outcomes

- Students will be able to understand various metabolisms and their interrelationships adopted by human body.
- Students will be able to understand principle and applications of various Instruments used in biochemical analysis.

ADVANCED NUTRITIONAL BIOCHEMISTRY AND INSTRUMENTATION (PRACTICAL)

Outcomes

- Students will gain practical knowledge in methods of estimating biochemical components in food by using Instrumental methods of food analysis.

ADVANCED HUMAN NUTRITION

Outcomes

- Students will be able to understand the importance of nutrition and learn various methods of enhancing nutrition and maintaining the quality in diets given to vulnerable groups.

ADVANCED HUMAN NUTRITION (PRACTICAL)

Outcomes:

- Students will gain practical knowledge in assessing nutrition and its quality in various dishes.

HUMAN VALUES&PROFESSIONAL ETHICS

Outcome

- The student will learn about the human values and professional ethics.

RESEARCH METHODOLOGY

Outcomes:

- Demonstrate knowledge of the scientific method, purpose and approaches to research
- Compare and contrast quantitative and qualitative research
- Explain research design and the research cycle
- Prepare key elements of a research proposal
- Explain ethical principles, issues and procedures

ADVANCED FOOD SCIENCE

Outcomes

- Understand the chemistry of food components like proteins, carbohydrates and lipids.
- Understand basic concepts of new food product development.
- Enable to learn about the food additives that are relevant to processed food industry for shelf life extension, processing aids and sensory appeal.

FOOD MICROBIOLOGY AND FOOD SAFETY

Outcomes

- Students will gain knowledge on various qualitative and quantitative aspects related to microorganisms associated with foods and different rapid techniques to detect microorganisms in food.
- Students will gain knowledge on various quality control parameters of foods. They will be through with the basic pre-requisite programmers, national and international food regulations.

FOOD MICROBIOLOGY AND FOOD SAFETY

(PRACTICAL)

Outcomes

- Students will gain practical knowledge in different techniques used for identification of different pathogens and will be able to understand the quality aspects of food and water.
- Study of various microbiological laboratory equipment.
- Preparation of different culture medium.
- Determination of bacteria and viable microbes by different techniques.
- Simple staining, Gram staining, acid fast staining spore staining, capsule staining of culture.
- Use of Biochemical tests for identifying bacteria.
- Microbiological analysis of water, milk and curd
- Microbiological analysis of fruits, vegetables, meat, cereals and canned foods.
- Assessment of surface sanitation and hygiene of food preparation units.
- Visit to food processing unit or any other organization dealing with advanced method in food microbiology.

THERAPEUTIC NUTRITION

Outcomes

- Students will be able to understand the various principles in diet therapy and diet counseling.

THERAPEUTIC NUTRITION

(PRACTICAL)

Outcomes

- Students will gain practical knowledge in various principles in diet therapy and diet counseling.

POs, PSOs, COs of All Programme for the Academic Year - 2020-21

PUBLIC HEALTH NUTRITION

Outcomes

- Students will be able to understand demographic transition and its implications on the quality of life, economic consequences of malnutrition and strategies for improving the nutritional status of communities.

PUBLIC HEALTH NUTRITION

PRACTICAL

Outcomes

- Students will gain practical knowledge in evaluating public health and various aspects in implementing action plan for vulnerable groups