PROGRAMME OUTCOMES (B. Sc.)

PO1. Critical Thinking: Acquire knowledge of theoretical and practical aspects; enhance innovative ideas in science and technology, develop and investigate throughout their learning from different perspective.

PO2: Effective Communication: Able to understand, converse, and direct the scientific knowledge gained.

PO3: Social Interaction: Able to analyze the different aspects and interpret the data by following the scientific methods and hence solve the different problems in the society at large.

PO4: Effective Citizenship: Helps in understanding different areas of science such as Chemistry, Botany, Physics and Mathematics as this course forms the basis of science and develop the method of understanding and selflessness.

PO5: Ethics: as a result of gaining scientific knowledge they recognize different value system and moral dimensions of the decisions taken and accept the responsibilities.

PO6: Environment and Sustainability: Understand the issues of environmental perspective and discover ways for sustainable development.

PO7: Self directed and Life-long Learning: In the process, students acquire skills, design, apply and utilize the technology in day to day life.

PO8: Holistic development through sports and cultural development.

BACHELOR OF SCIENCE- BOTANY

PROGRAM SPECIFIC OUTCOME (PSO)

PSO1. Acquire competency in the subject and its allied branches so as to identify major groups of plants and compare their characteristics.

PSO2. Understand plant developmental processes and their metabolic activities, concepts in plant breeding, molecular biology, genetic engineering and plant tissue culture.

PSO3. Develop and use bio-fertilizers; gain insights into various aspects of the environment and its conservation.

PSO4. Understand the ecology of plants and their economic and medicinal value, various concepts in microbiology and how to prevent and manage plant diseases; have in-depth knowledge of gardening, floriculture and horticulture.

PSO5. Study plants in their natural habitat through field visits as well as acquire skills to handle scientific instruments and plan and perform laboratory experiments.

PSO6. Acquire in-depth subject knowledge of fundamental concepts as well as advanced and emerging areas of Botany and its applied aspects along with necessary skills for critical thinking and problem solving capabilities to integrate with academia and industry.

COURSE OUTCOMES (CO)

SEMESTER I

Course code: BOC 101
Course title: BIODIVERSITY I (Microbes, Algae, Fungi and Bryophytes)

CO1. Gain basic knowledge of microbes with respect to their discovery, structure, reproduction and economic importance.

CO2. Understand morphological and anatomical features and reproductive structures of lower groups of plants such as algae, fungi and bryophytes.

CO3. Appreciate plant diversity and their economic and ecological importance.

CO4. Develop basic skills in handling and sectioning of plant specimens.

CO5. Develop specific skills in handling and culturing of microbes.

CO6. Use practical knowledge for preparation of value-added edible plant products.

Course code: BOG 101
Course title: ENVIRONMENTAL BIOTECHNOLOGY

CO1. Develop an understanding of the global environmental problems and their impact.

CO2. Have an insight into the microbiology of waste water treatment.

CO3. Enhance the understanding of xenobiotic compounds and their bioremediation.

CO4. Understand the role of bio-techniques for management of environmental pollution.

CO5. Understand the approaches for pollution management through legislations, policies and public participation.

CO6. Develop a deeper understanding of economics and environment with reference to sustainable development.

SEMESTER II

Course code: BOC 102
Course title: BIODIVERSITY II (Vascular Plants)

CO1. Gain knowledge of different members of pteridophytes, gymnosperms and angiosperms.

CO2. Understand the morphological and anatomical features of pteridophytes and gymnosperms.

CO3. Identify and classify plants belonging to different angiosperm families.

CO4. Appreciate the economic and ecological importance of the above mentioned plant groups.

Course code: BOG 102
Course title: COASTAL AND MANGROVE ECOLOGY

CO1. Understand the role of coastal ecology in relation to sand dune vegetation and Mangrove diversity.

CO2. Learn about the diverse flora and fauna of mangrove ecosystem.

CO3. Understand the various threats to mangrove ecosystem and strategies for their conservation, restoration and management.

SEMESTER III

Course code: BOC 103
Course title: PLANT ANATOMY AND EMBRYOLOGY

CO1. Gain knowledge of plant cellular organization into tissues and their specific functions.

CO2. Understand the primary structure of root, stem and leaf as also secondary growth in plants.

CO3. Analyze the anatomical adaptations and protective systems in plants.

CO4. Understand the structural organization of flower and functions of reproductive whorls.

CO5. Evaluate mechanisms and adaptations for pollination and fertilization.

CO6. Understand the structure of embryo, endosperm and seed.

CO7. Analyze mechanisms and adaptations for fruit and seed dispersal.

CO8. Develop basic skills in sectioning of plant specimens to study anatomical adaptations and analyze various embryological features.

Course code: BOS 101
Course title: FLORICULTURE

CO1. Understand the concept of floriculture and cultivation of commercial ornamental plants.

CO2. Develop basic skills in techniques and different styles flower arrangement.

CO3. Learn routine nursery management practices, garden operations and plant propagation techniques.

CO4. Understand the concept of plant growth, practical problems and plant care.

CO5. Have knowledge of use of phytohormones & postharvest technology for ornamental plants.

CO6. Have an insight to various government schemes in floriculture industry.

CO7. Be able to establish start-ups in floriculture business.

SEMESTER IV

Course code: BOC 104
Course title: PLANT PHYSIOLOGY

CO1. Understand plant-water relation with respect to various physiological processes.

CO2. Examine the role of macronutrients and micronutrients in plant growth.

CO3. Understand the process of photosynthesis, respiration and biological nitrogen fixation in plants.

CO4. Analyze the role of enzymes, plant growth regulators, light and temperature in plant growth and development.

Course code: BOS 102
Course title: HERBAL TECHNOLOGY

CO1. Gain knowledge of the importance of herbal medicines, their collection, processing and marketing.

CO2. Learn about various herbs, their botanical names, chemical constituents and medicinal uses.

CO3. Develop skills in preparation of crude herbal extracts, cosmetic formulations and detect drug adulteration.

CO4. Understand the importance of herbal nutraceuticals for a healthy lifestyle.

CO5. Learn about medicinal plant conservation methods.

SEMESTER V

Course code: BOC 105
Course title: CLASSICAL TAXONOMY AND PHYLOGENY

CO1. Understand various morphological terms and apply the same to describe plants.

CO2. Generalize characters of families to identify common and economically important plants according to Bentham & Hooker's system of classification.

CO3. Describe the floral structure and infer the floral formula.¬

CO4. Gain knowledge about the origin and phylogeny of angiosperms.¬

Course code: BOC 106
Course title: CELL BIOLOGY AND PLANT BIOCHEMISTRY

CO1. Gain knowledge about the various cell organelles and their role in cell functioning.

CO2. Understand the chemical structure and properties of biomolecules and their role in living organisms.

CO3. Develop skills in various techniques used in cell biology studies.

CO4. Be proficient in handling various instruments used in biochemistry related experiments.

Course code: BOC 107
Course title: MICROBIOLOGY AND PLANT PATHOLOGY

CO1. Gain knowledge of sterilization methods, biohazards and biosafety measures.

CO2. Gain knowledge of methods for cultivation, preservation and maintenance of microbial cultures.

CO3. Understand the role and relevance of beneficial microorganisms and their applications in day to day life.

CO4. Understand the fundamental basis of plant-microbe interaction that leads to plant diseases and measures to be adopted for plant health management.

CO5. Acquire skills in isolation and handling of microbes.

Course code: BOD 101
Course title: PLANT TISSUE CULTURE

CO1. Gain knowledge of the basic techniques involved in plant tissue culture.

CO2. Understand the concept of cellular totipotency and differentiation as well as the role of plant growth regulators in plant tissue culture.

CO3. Gain proficiency in techniques of plant regeneration.

CO4. Have an insight of the applications of plant tissue culture in crop improvement.

Course code: BOD 103
Course title: ECONOMIC AND MEDICINAL BOTANY

CO1. Gain knowledge of various economically and medicinally important plant species.

CO2. Utilize the knowledge of cultivation and uses of plants in day to day life.

CO3. Have an insight on crop research organizations involved in improvement of different economically important crops.

SEMESTER VI

Course code: BOC 108
Course title: CYTOGENETICS AND PLANT BREEDING

CO1. Learn about basic and advanced concepts in cytogenetics.

CO2. Understand Mendelian genetics through problem solving exercises.

CO3. Apply the knowledge of cytogenetics in plant breeding.

CO4. Understand the molecular basis of mutation and its phenotypic effect on the organism.

CO5. Learn about the various methods of crop improvement.

CO6. Develop skills in plant breeding such as emasculation, artificial pollination and induction of polyploidy.

Course code: BOC 109
Course title: MOLECULAR BIOLOGY AND GENETIC ENGINEERING

CO1. Gain knowledge of the concepts of molecular biology such as structure of nucleic acids, replication, transcription and translation.

CO2. Understand gene structure, regulation and modification of RNA.

CO3. Understand the concepts of recombinant DNA technology and gene cloning and its various applications.

Course code: BOC 110
Course title: PLANT ECOLOGY AND PHYTOGEOGRAPHY

CO1. Learn fundamental aspects of ecology including abiotic and biotic components, their structure, interrelationship and function.

CO2. Understand the different ecosystems.

CO3. Gain knowledge of phytogeography with reference to continental drift, endemism and biomes.

CO4. Develop skills in qualitative and quantitative measurement of various ecological parameters.

Course code: BOD 104
Course title: BIOFERTILIZERS

CO1. Develop an insight into the concept of biofertilizers.

CO2. Develop an understanding of the types, formulation, method of field application and the benefits associated with use of biofertilizers.

CO3. Acquire skills in preparation of compost and carrier based bio-inoculum.

CO4. Develop an eco-friendly approach for management of agricultural land and crops in a Cost effective manner.

BACHELOR OF SCIENCE – CHEMISTRY

PROGRAMME SPECIFIC OUTCOME (PSO)

PSO1 Students will be able to acquire core knowledge in the key areas of Chemistry, develop written & oral communication skills in communicating chemistry-related topics.

PSO2 Design & conduct experiments, demonstrate their understanding of the scientific methods & processes.

PSO3 Develop proficiency in acquiring data using a variety of instruments, analyze & interpret the data, learn applications of numerical techniques.

PSO4 Realize & develop an understanding of the impact of Chemistry on society.

COURSE OUTCOME (CO)

Semester I: CHC 101

CO1 Evaluate Bohr's theory, Quantum theory for structure of an atom, the radial plots and probability distribution curves.

CO2 Illustrate the rules for electronic configuration of an atom.

CO3 Arrange and discuss the general characteristics of ionic compounds, covalent compounds, valence bond theory, VSEPR, and molecular orbital theory for covalentcompounds.

CO4 Identify the curved arrow notations, electronic displacement in organic reactions.

CO5 Outline the structure, shape and reactivity of organic molecules.

CO6 Infer the concept of isomerism, stereoisomerism, configuration, chirality andoptical rotation.

CO7 Summarize various methods of preparation and reactions of alkanes, alkenesand alkynes.

CO8 Classify the metal ions by volumetric methods employing redox and acid-basetitration concepts.

CO9 Hands on experience in the systematic qualitative analysis of the organic compounds and the purification and separation techniques for organic compounds.

Semester I: CHG 103

CO1 Infer the various branches of science.

CO2 Outline about the scientists who are inspirations to the youngster generation.

CO3 Relate organic chemistry and its application in daily life; carbon, nitrogen, water and oxygen cycles.

CO4 analyze how chemistry and industry go hand in hand.

Semester II: CHC 102

CO1 Define the terms and state laws involved in thermodynamics, thermochemistry and chemical equilibrium.

CO2 Derive the thermodynamic derivation of the law of chemical standard state, enthalpies of solution, chemical equilibrium and relationships between different equilibrium constants based on ideal gases.

CO3 Solve numerical based on chemical energetics, chemical equilibrium and ionic equilibrium.

CO4 Write the preparation methods and reactions of aromatic hydrocarbons, alkyl and aryl halides, phenols, ethers and carbonyl compounds.

CO5 Memorize the various name reactions mentioned in the syllabus.

CO6 Understand Benzyne mechanism with respect to aromatic nucleophilic substitution.

CO7 Develop the problem-solving skills and hands on experience with reference toconcepts studied in theory pH metry, thermochemistry.

CO8 Understand the mechanism of reactions involved in organic preparation experiments and develop hands on experience with reference to basic laboratory techniques required for organic preparations.

Semester II: CHG 104

CO1 Teach the importance of chemistry in daily life.

CO2 Memorize various techniques to purify organic compounds.

CO3 Classify various medicinal compounds derived from nature and theirapplications.

Semester III: CHC 103

CO1 Analyze the difference between ideal and non-ideal solutions and draw the phase diagrams of various systems and to apply the phase rule equation.

CO2 Categorize the conductance of strong and weak electrolytes.

CO3 Formulate reversible and irreversible cells and measurement of EMF.

CO4 Assess the numerical problems based on standard electrode potentials andconductance measurement of solutions.

CO5 Combine the preparation/synthesis and reactions of carboxylic acids and their derivatives, amines, diazonium salts, amino acids and simple peptides.

CO6 Assemble the laws, the terms involved and to distinguish between cis and trans isomers using UV –Visible Spectroscopy.

CO7 Conclude Woodward-Fieser rules for calculation of λmax for conjugateddienes and α, β unsaturated carbonyl compounds.

CO8 Evaluate the classification of carbohydrates and their general properties.

CO9 Illustrate and develop the problem-solving skills and hands on experience with reference to concepts studied in theory. (phase equilibria, conductometry and potentiometry)

CO10 Gain knowledge of analyzing organic compounds and perform estimations.

Semester III: CHS 101

CO1 Evaluate renewable, non-renewable, alternative energy sources, fuel, calorificvalue and the characteristics of a good fuel.

CO2 Illustrate the composition and uses of coal gas, producer gas and water gas.

CO3 Outline coal gasification (Hydrogasification and Catalytic gasification), coal liquefaction, solvent refining, different types of petroleum products and their applications.

CO4 Compute idea about food processing, food preservation, adulteration, the concept of pH and pH measurement with respect different types of soils.

CO5 Infer the use of different indicators for mapping various soil characteristics toimprove soil fertility.

CO6 Summarize the sources responsible for contaminating water, study water sampling methods and methods employed for the purification of water.

CO7 Classify the different methods employed for the determination of various physicochemical parameters of water.

CO8 Infer the method of determination of soil pH.

Semester IV: CHC 104

CO1 Teach the postulates of kinetic theory of gases and understand the deviations of real gases from ideal behavior, properties of liquids and the methods to measure them.

CO2 Write the structures of cubic crystals and the laws explaining their structure.

CO3 Memorize rates of chemical reactions of zero, first and second orders.

CO4 Understand the complexing ability and stability of various oxidation states(Latimer diagrams) for Mn, Fe, and Cu.

CO5 Explain the factors affecting the magnitude of 10Dq and the effect of strongfield and weak field ligands on CFSE.

CO6 Study crystal field splitting in tetrahedral and octahedral complexes and tocalculate CFSE.

CO7 Understand and develop the problem-solving skills and hands on experiencewith reference to concepts studied in theory.

CO8 Analyze the cations and anions in a given mixture.

CO9 Estimate several metal ions using the gravimetric and volumetric techniques.

Semester IV: CHS 107

CO1 Explain the term cosmeticology.

CO2 Illustrate marketed products and describe the preparation formulation andpackaging of various cosmetic products.

CO3 Define herb and other terms involved.

CO4 Describe the development of Ayurvedic and Herbal formulations and their evaluation by physical methods, chemical methods and microscopical techniques.

CO5 Formulate and prepare Herbal cosmetics for skin care and hair care products.

CO6 Understand the classification of perfumes, categorize the ingredients and theimportance of essential oils in cosmetic industries.

CO7 Describe the general methods of obtaining volatile oils from plants. Todescribe the composition of volatile oils.

CO8 Develop preparation and skills of working and preparation of variouscosmetic products.

Semester V: CHC 105

CO1 Predict optical activity, polarization, dipole moment and methods ofdetermination of dipole moments and structure of molecules.

CO2 Categorize different nuclides. Binding energy and nuclear forces. To studynuclear models, radioactivity.

CO3 Relate emf and its measurements. To study concentration cell, itsmeasurements, applications.

CO4 Combine decomposition potential, overvoltage and factors affecting them.

CO5 Assemble the principles, hypothesis, postulates of quantum mechanics in Quantum chemistry.

CO6 Assess the basic mathematical concepts in quantum chemistry.

CO7 Conclude the wave functions, orbital diagrams and the graphs involved and tosolve the numerical..

CO8 Evaluate electromagnetic spectrum, Rotational spectra of diatomic molecules,determination of bond lengths and qualitative description..

CO9 Illustate and develop the problem-solving skills and hands on experience with reference to concepts studied in theory (potentiometry, pH metry, Solubility, Chemical kinetics).

Semester V: CHC 106

CO1 Arrange the various periodic properties in the groups and the periods of theperiodic table.

CO2 Outline Interhalogens, Oxyacids of Halogens, Polyhalides and Pseudohalogens and generalize their properties.

CO3 Infer the occurrence, general properties, hydrates and Clathrates of Noblegases.

CO4 Summarize concept of defects in solids, define Schottky and Frenkel defects,Color center, extended defects and Non-stoichiometry.

CO5 Generalize Werner's Co-ordinationTheory, Ligand field Theory andMolecular Orbital Theory (σ as well as π bonding).

CO6 Compute the basic concepts of oxidation and reduction and the study ofelectrochemical series.

CO7 Classify and draw Frost, latimer and Pourbaix diagrams for various types of reactions and to study the principles involved in extraction of elements.

CO8 Relate Nano chemistry and explain nano particles, their properties andapplications.

CO9 Analyze the roles of myoglobin and hemoglobin and to define and studymetalloenzymes.

CO10 Formulate and to get hands on experience on the various steps involved in gravimetry for quantitative estimations of desire metal ions in the presence of other interfering ions in the mixture of salt solutions by precipitating method and preparation of some inorganic complexes.

Semester V: CHC 107

CO1 Combine the concept of aromaticity, mechanistic aspects of electrophilic andnucleophilic aromatic substitution.

CO2 Assemble the concept related to reactivity and orientation of activating anddeactivating groups.

CO3 Assess methods for structure elucidation of Nicotine, Papaverine and Hygrine.

CO4 Conclude the synthesis of Nicotine from Succinimide, synthesis of Papaverine using Bischler-Napieralski reaction and synthesis of Hygrine from Pyrrole.

CO5 Evaluate the concepts and interpretation of IR, NMR and Mass spectroscopicmethods.

CO6 Illustate heterocyclic compounds, bicyclic heterocycles with examples and classification with examples of oxygen, sulphur and nitrogen containing heterocycles (up to 6 membered).

CO7 Arrange structure, resonance, stability and reactivity of furan, pyrrole, thiophene, pyridine, indole, quinoline and isoquinoline and also learn about their industrial source and preparation methods.

CO8 Outline the structure elucidation of Vitamin A, Vitamin C , Thyroxine and Adrenaline and also learn their synthesis from β-ionone, xylose, tyrosine andcatechol respectively.

CO9 Compute synthesis and understand chemistry of phenolphthalein, congo-red, crystal violet and methyl orange.

CO10 Infer theoretical concepts required for experiments and develop hands on experience with reference to basic laboratory techniques required for organic preparations, estimations and identification and separation of organic binary mixtures

Semester V: CHD 101

CO1 Summarize the terms involved in analytical chemistry, sampling techniques, data handling, chromatographic Techniques and electroanalytical methods.

CO2 Infer scope and importance of analytical chemistry, different types ofsampling and the types of solvent extractions.

CO3 Classify different types of chromatographic techniques and errors withexamples.

CO4 Predict the principles of volumetric analysis and gravimetric analysis and the instrumentation of electrogravimetry, coulometry and polarographic analysis.

CO5 Relate numericals of evaluation of data and solvent extractions.

CO6 Analyze and develop the problem-solving skills and hands on experience with reference to concepts studied in theory (ion exchange chromatography, colorimetry,statistical data).

Semester V: CHD 102

CO1 Categorize the need of Green Chemistry and to know the 12 principles ofGreen Chemistry.

CO2 Combine the Green chemistry institutes and organizations in the world andstudy green techniques in chemistry.

CO3 Assess the mechanism of Phase Transfer Catalysis and to study the real-worldcases in chemistry.

CO4 Assemble the various risks and hazards involved in a chemical laboratory anduse of personnel protective equipment to be used.

CO5 Conclude the toxic hazards involved in a chemical laboratory and working offire extinguishers.

CO6 Evaluate the different types of waste and their hazards associated in achemical laboratory.

CO7 Illustrate the precautions to be taken while working with water-dependent, electrical, and heating devices and to study the handling of solid waste.

Semester VI: CHC 108

CO1 Study the molecular orbital theory diagrams and the graphs involved.

CO2 Interpret the physical picture of bonding and antibonding wavefunction.

CO3 Define terms involved in electrochemistry, pH, poH, pKa, pKb. Buffer solution, buffer capacity. Measurement of pH using different electrodes by potentiometric methods.

CO4 Derive and solve numerical on Henderson's equation.

CO5 Calculate energy released in nuclear fission, fission products.

CO6 Classify and describe the working of various nuclear reactors.

CO7 Draw and interpret Jablonski diagrams.

CO8 Teach vibrational spectroscopy, IR, harmonic and anharmonic oscillator, Raman spectroscopy.

CO9 Study stokes and antistock lines, Raman shift and selection rules involved.

CO10 Understand and develop the problem-solving skills and hands on experiencewith reference to concepts studied in theory.

Semester VI: CHC 109

CO1 Define the terms Organometallic compounds, mononuclear, polynuclearmetal carbonyls.

CO2 Describe the Effective atomic number rule, 18 electron rule for metalcarbonyls and organometallic compounds.

CO3 Compare the different types of magnetic behavior.

CO4 Evaluate the effect of crystal field splitting on magnetic and spectralproperties of octahedral complexes.

CO5 Compare the substitution reaction mechanisms of octahedral complexes andthe trans effect observed in square planar complexes.

CO6 Explain the distinct types of reactions occurring in liquid ammonia and liquidSulphur dioxide solvents.

CO7 Define concept of Symmetry elements: Centre of symmetry, Rotation axis, Mirror plane, rotation – reflection axis and Identity. To apply concepts of symmetryand point groups to different molecules.

CO8 Analyze the metal ions by volumetric methods employing redox, argentometric and complexometric titration concepts.

CO9 Estimate the metal ion by volumetric analysis.

Semester VI: CHC 110

CO1 Understand the reactions and mechanism of name reactions and rearrangements mentioned in the syllabus.

CO2 Understand the generation of enolate ions and their use in synthetic organicchemistry.

CO3 Illustrate Jablonskii diagram and understand fluorescence, phosphorescence,intersystem crossing, and vibrational relaxation.

CO4 Recite photochemical reactions.

CO5 Explain synthesis and structure elucidation of terpenes.

CO6 Recite reactions of glucose and determine the ring size of Glucose andsucrose.

CO7 Understand the open chain reactions of sucrose and inversion of cane sugar.

CO8 Classify stereospecific and stereoselective reactions.

CO9 Take part in the preparation of derivatives using the reactions learnt in theory and binary mixture separation followed by analysis of individual compound.

Semester VI: CHD 103

CO1 Define the terms involved in chromatographic techniques and spectroscopicmethods.

CO2 Explain working of chromatographic techniques and detectors, spectrophotometer, Atomic spectroscopy, DTA, DSC.

CO3 Describe the basic components of instruments.

CO4 Sketch the schematic diagrams of different instruments.

CO5 Solve numerical on chromatographic techniques.

CO6 Memorize the applications of different chromatographic techniques andspectroscopic methods.

PROGRAMME SPECIFIC OUTCOMES

B.SC. MATHEMATICS

PSO1: Acquire knowledge of basic Mathematical concepts.

PSO2: Understand and develop Mathematical arguments in a logical manner.

PSO3: Acquire problem solving, reasoning and critical thinking skills.

PSO4: Apply knowledge of Mathematics in solving real life problems.

Course Outcomes

SEMESTER I

Course Code: MTC101

Course Title: Calculus and Numerical Methods

CO1: Acquire knowledge of concepts related to Calculus such as real number system, sequences, limits, continuity and differentiability.

CO2: Compare between different approaches in solving problems on continuity and differentiability.

CO3: Use numerical methods in solving problems on interpolation, integration and finding roots of algebraic and transcendental equations.

CO4: Apply the Archimedean Principle, Triangle Inequalityin proving important results.

SEMESTER II

Course Code: MTC102

Course Title: Matrices and Linear Algebra

CO1: Perform different matrix operations.

CO2: Prove properties of matrices.

CO3: Define a vector space, inner product space and state its properties.

CO4: Solve examples on linear transformations.

SEMESTER III

Course Code: MTC103

Course Title: Differential Equations and Discrete Mathematics

CO1: Acquire Knowledge of differential equations of first and higher orders.

CO2: Compare between different methods of obtaining the general solution of differential equations.

CO3: Understand the basic concepts of graph theory.

CO4: Apply the knowledge of discrete mathematics to real life problems.

SEMESTER IV

Course Code: MTC104

Course Title: Analysis and Operations Research

CO1: Define a sequence of partial sums and terms related to it.

CO2: State the necessary condition for convergence of sequence of partial sums.

CO3: Test the convergence of any given series by various convergence tests.

CO4: Solve linear programming problems by Simplex Method.

PROGRAMME SPECIFIC OUTCOMES

PHYSICS

PSO1: Strengthening basics concepts of physics and mathematical skills.

PSO2: Developing logical reasoning and analytical thinking in students.

PSO3: Inducing practical skills in students.

PSO4: Improve teamwork and performance in group activities.

MATHEMATICAL METHODS, MECHANICS and ELECTRICAL CIRCUIT THEORY (PYC101)

CO1: Encounter a mathematical problem is easiest possible way and use it in physics situations to get solutions of numerous problems.

CO2: Applying Newton's laws to solve problems and knowledge about how things work in real world based on them.

CO3: Analyse all the forces acting on an object at rest or motion and getting future data using suitable equation.

CO4: Analyse linear circuit using different methods to find voltage or current drawn to load.

CO5: Understand concept of self and mutual induction and their applications in different electrical circuits or devices.

CO6: Understand how circuits containing L, C and R respond to DC and AC.

CO7: Analyse AC bridges to find value of unknown component.

HEAT & THERMODYNAMICS And PROPERTIES OF MATTER & ACOUSTICS (PYC102)

CO1: Understand the concept of gases and how their characteristics chances with respect to change in pressure and temperature.

CO2: Understand varies thermodynamic processes like adiabatic, isothermal, isochoric and laws of thermodynamic.

CO3: Understand concept of Entropy.

CO4: Understand the effect of force on different materials and their properties like elasticity and modulus of elasticity.

CO5: Understand surface tension in nature and its application is day to day life.

CO6: Understand different types of flows of fluid and concept of viscosity.

CO7: Understand concept of sound, how it travels, concept of Doppler effect and how to produce and detect ultra-sonic waves.

WAVES & OSCILLATIONS And ELECTRONICS

CO1: Understand how potential and kinetic energy changes in SHM and what happens to the total energy.

CO2: Understand and analyse damped hormonic motion with respect to 3 cases “Underdamped, overdamped and critically damped”.

CO3: Understand how to set a damped object in continuous oscillations using forced oscillation.

CO4: Understand the concept of superposition of waves.

CO5: Acquire knowledge about semiconductor such are diodes, Zener diode, transistor used in numerous electronic gadgets.

CO6: Analyse and understand how rectifiers convert AC to DC

CO7: Understand the working of basic amplifier.

OPTICS And MODERN PHYSICS(PYC104)

CO1: Impart students with knowledge about interference, diffraction, formation of fringes and resolving power.

CO2: Understand concept about polarization, double diffraction, construction and working of Nichol prism.

CO3: Understand the motion of charged particle in electric and magnetic field.

CO4: Understand the concept of particle nature of radiation through photoelectric effect and Compton effect.

CO5: Analysing the crystal structure using X-Ray diffreaction.