

Course outcomes

School of Basic and Applied Sciences

Physics (B.Sc.)

Mechanics

CO1: Students will be able to articulate and describe relative motion. Inertial and non inertial reference frames.

CO2: Students will be able to define the motion of mechanical systems and their degrees of freedom.

CO3: Students will be able to understand the interaction of forces between solids in mechanical systems, centre of mass and inertia tensor of mechanical systems.

CO4: Students will be able to develop analytical approach as tool for problem solving in mechanics

Optics & Vibrations

CO1: Apply knowledge of thermodynamics, sound waves, and light waves to explain natural physical processes and related technological advances.

CO2: Use an understanding of algebraic mathematics along with physical principles to effectively solve problems encountered in everyday life, further study in science, and in the professional world.

CO3: Design experiments and acquire data in order to explore physical principles, effectively communicate results, and critically evaluate related scientific studies.

CO4: Assess the contributions of physics to our evolving understanding of global change and sustainability while placing the development of physics in its historical and cultural context.

Mathematical Physics

CO1: The objective of the course is to equip the B.Sc. students with the mathematical techniques that he/she needs for understanding theoretical treatment in different courses taught in this class.

CO2: The students will learn important mathematical analysis complex analysis, tensor analysis, group theory etc. needed for understanding theoretical treatment in different courses

Electricity & Magnetism

CO1: Apply knowledge of electricity and magnetism to explain natural physical processes and related technological advances.

CO2: Use an understanding of calculus along with physical principles to effectively solve problems encountered in everyday life, further study in science, and in the professional world.

Thermal Physics

CO1: Provide students with a broad understanding and appreciation of the physical principles and laws governing the universe.

CO2: Prepare students for success in their chosen careers by emphasizing critical thinking and scientific reasoning through an inquiry-based curriculum.

CO3: Develop quantitative, analytical and problem-solving skills in majors and non-majors to ensure that students emerging from the coursework/program are equipped with the set of competencies required in Science, Technology, Engineering and Mathematics workplace.

Solid State Physics

CO1: Students should gain basic knowledge of solid state physics.

CO2: The student will:

-be able to account for interatomic forces and bonds have a basic knowledge of crystal systems and spatial symmetries

-be able to account for how crystalline materials are studied using diffraction, including concepts like form factor, structure factor, and scattering amplitude.

-know the principles of structure determination by diffraction.

-understand the concept of reciprocal space and be able to use it as a tool

-know the significance of Brillouin zones

Laser Physics

CO1: predict fundamental (and ultimate) characteristics of laser systems based on specific laser materials, such as output power and lasing threshold

CO2: determine the laser behaviour depending on the line broadening mechanism

CO3: Students will gain a significantly enhanced understanding of how lasers work and which types of lasers are most relevant for specific performance specifications and subsequent applications.

Nuclear Physics

CO1: to understand the basic concepts of nuclear physics and express the radioactive decay such as alpha decay, beta decay etc..

CO2: Can explain nuclear reactions, nuclear fusion, nuclear fission.

Atomic & Molecular Physics

CO1: Describe the atomic spectra of one and two valence electron atoms.

CO2: Explain the change in behavior of atoms in external applied electric and magnetic field.

CO3: Explain rotational, vibrational, electronic and Raman spectra of molecules.

CO4 Describe electron spin and nuclear magnetic resonance spectroscopy and their applications.

Particle Physics

CO1: Acquire knowledge in the content areas of particle physics

CO2: Develop and communicate analytical skills in subatomic physics.

CO3: Develop familiarity with particle physics, facilitating informed decisions as students pursue research projects, internships, careers, and graduate study.

CO4: Learn about topics of interest independently, and subsequently organize and present information to each other and to a group, at an appropriate level for their target audience.

Fundamentals of Quantum Mechanics

CO1: Learn the mathematical tools needed to solve quantum mechanics problems.

CO2: Solutions of ordinary and partial differential equations that arise in quantum mechanics will also be studied.

CO3: Build connections between mathematical development and conceptual understanding.

Electronics

CO1: Identify the unique vocabulary associated with electronics and explain the basic concepts of Semiconductor diodes such as pn junction diode, characteristics and ammeters, DC loadline, Zener diode.

CO2: To apply the basics of diode to describe the working of rectifier circuits such as Full and half wave rectifiers. To solve examples on rectifiers for parameters such as Capacitance, load and source effect, line and load regulations, and circuit current.

CO3: Draw and explain the structure of bipolar junction transistor. Explain the operation of each device in terms of junction bias voltage and charge carrier movement. Identify and explain the various current components in a transistor.

CO4: Describe the application of transistors for Current and voltage amplification. Also to describe the characteristics of different configurations of the transistor. Describe DC load line and bias point. List, explain, and design and analyze the different biasing circuits.

CO5: List and explain the different number system. Solve examples on converting one form of number system to another form. State Boolean laws and theorems. State and explain the different logic gates using truth table. Analyze and design different adder circuits.

Digital Electronics

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: Acquire the fundamental knowledge of analog and digital electronics to get different types analog to digitalized signal and vice-versa converters in real world with different changing circumstances.

Statistical Mechanics & Thermodynamics

CO1: To acquire working knowledge of the zero-th and first law of thermodynamic

CO2: To acquire working knowledge of the second law of thermodynamics.

CO2: To apply the laws of thermodynamics.

CO4: To link thermodynamics to the micro description used in classical Statistical Mechanics.

CO5: To introduce advanced topics related to Quantum Statistical Mechanics

Computer Simulations in Physics

CO1: Break apart a problem into its component parts.

CO2: Debug computer code that they write.

CO3: Make comparisons between the computer model and the actual physical system.

Astronomy & Astrophysics

CO1: Understand the relation between astronomy and astrophysics.

CO2: Apply principles of physics to astronomical objects.

CO3: Introduce students to the field of astrophysics with mathematically based principles.

Nanotechnology

CO1: Discuss and evaluate state-of-the-art characterization methods for nanomaterials, and determine nanomaterial safety and handling methods required during characterization.

CO2: Explain the fundamental principles of nanotechnology and their application

CO3: Acquire knowledge to identify and compare state-of-the-art nanofabrication methods

Introduction to Microprocessor

CO1: To understand basic architecture of 16 bit and 32 bit microprocessors.

CO2: To understand interfacing of 16 bit microprocessor with memory and peripheral chips involving system design.

CO3: To understand techniques for faster execution of instructions and improve speed of operation and performance of microprocessors.

CO4: To understand RISC and CISC based microprocessors. 5. To understand concept of multi core processors.

Renewable Sources of Energy

CO1: Define basic properties of different renewable sources of energy and technologies for their utilisation,

CO2: Describe main elements of technical systems designed for utilisation of renewable sources of energy,

CO3: Interpret advantages and disadvantages of different renewable sources of energy

CO4: Undertake simple analysis of energy potential of renewable sources of energy,

CO5: Explain the correlation between different operational parameters,

CO6: Select engineering approach to problem solving when implementing the projects on renewable sources of energy

Higher Mathematical Physics

CO1: The objective of the course is to equip the B.Sc. students with the mathematical techniques that he/she needs for understanding theoretical treatment in different courses taught in this class and for developing a strong background if he/she chooses to pursue research in physics as a career.

CO2: The students will learn important mathematical functions beta, gamma, delta function, complex analysis, tensor analysis and their applications in physics so that he/she needs for understanding theoretical treatment in different courses

Physics (M.Sc.)

Mathematical Physics I & II:

CO1: The objective of the course is to equip the M.Sc. students with the mathematical techniques that he/she needs for understanding theoretical treatment in different courses taught in this class and for developing a strong background if he/she chooses to pursue research in physics as a career.

CO2: The students will learn important mathematical functions such as Bessel function, Legendre polynomial, Green's function etc. their basic properties and applications in physics so that he/she needs for understanding theoretical treatment in different courses

Classical Mechanics:

CO1: The course will train the students of in the Lagrangian and Hamiltonian formalisms to an extent that they can use these in the modern branches like Quantum Mechanics, quantum Field Theory, Condensed Matter Physics, Astrophysics etc.

Electrodynamics:

CO1: On completion the students will gain knowledge in Electrostatics and Magnetostatics fields including Boundary value problems, Maxwell equations in metals and plasma media, Poynting theorem for a complex vector field, Thomson and Compton scattering.

CO2: It also covers motions of relativistic and non-relativistic charged particles in electrostatic and magnetic fields.

Computational Physics:

CO1: The M.Sc. students will be familiarized with the numerical methods used in computation and programming using C language so that they can use these in solving simple problems pertaining to Physics.

Nuclear & Particle Physics:

CO1: The students will be taught the basic aspects of nuclear physics like static properties of nuclei, radioactive decays, nuclear forces and relatively advanced topics in nuclear models and nuclear reactions so that they understand the details of the underlying aspects so that they are equipped with the techniques used in studying these things.

Electronics-I & II :

CO1: This course covers semiconductor physics, physical principles of devices and their basic applications, Analysis of Passive and Active filters, OPAMP based analog circuits and introduction to various communication techniques.

CO2: The students will be introduced basics of integrated circuit technology, Microprocessor 8085 Architecture, instruction set, interfacing with memory and I/O devices.

Solid State Physics I & II:

CO1: This course will expose the students to the basic properties of solids, lattice vibrations, dielectric properties, energy band theory and transport theory so that they are equipped with the techniques used in investigating these aspects of the matter in condensed phase.

Quantum Mechanics I & II:

CO1: The aim of the course is to equip the students with the techniques of angular momentum, perturbation theory, scattering theory and techniques of quantum field theory so that they can use these in various branches of physics as per their requirement.

Statistical Mechanics:

CO1: This course will equip the students with the techniques of Ensemble theory so that he/she can use these to understand the macroscopic properties of the matter in bulk in terms of its microscopic constituents.

Optoelectronics:

CO1: This course will introduce the students to the basics of the challenging research field of optical fibers.

Material Science & Nanotechnology:

CO1: This course will familiarize the students to the various aspects related to preparation, characterization and study of different properties of different kinds of materials so that they can pursue this emerging research field as career.

High Energy Physics:

CO1: This course will introduce the students to the various weak interactions, symmetries and conservation laws in high energy physics, unitary groups, Quark model and Quantum-chromodynamics so that they grasp the basics of high energy physics.

Astrophysics:

CO1: This course gives the basic understanding of the astronomical techniques, to understand the nature and structure of the universe from terrestrial planets to galaxies.

CO2: To understand the celestial phenomena related with the origin of the universe, galaxies, stars and planetary systems along with the synthesis of elements by stellar and primordial nucleosynthesis.

CO3: To explore the future evolution of the universe.

Experimental Techniques in Nuclear Physics:

CO1: The course will expose the students to theoretical aspects of different equipment and methods used in the fields of nuclear physics and particle physics.

Atomic and Molecular Spectroscopy:

CO1: This course will provide platform to the students to the various aspects of spectroscopy and their basic theory so that they can benefit this course in competitive examination and pursue this emerging research field as career.

Project Work

CO1: This course is in M.Sc. 4th semester. This course will expose the students to preliminaries and methodology of research. It may consist of review of some research papers, development of a laboratory experiment, fabrication of a device, working out some problem, participation in some ongoing research activity, analysis of data, etc. Project work can be in Experimental Physics or Theoretical Physics in the thrust as well as non-thrust research areas of the department.

Chemistry (B.Sc.)

Inorganic Chemistry

CO1: Students will be able to design and carry out scientific experiments as well as accurately record and analyze the results of such experiments.

CO2: Students will be skilled in problem solving, critical thinking and analytical reasoning as applied to scientific problems.

CO3: Students will be able to clearly communicate the results of scientific work in oral, written and electronic formats to both scientists and the public at large.

CO4: Students will be able to explore new areas of research in both chemistry and allied fields of science and technology.

CO5: Students will appreciate the central role of chemistry in our society and use this as a basis for ethical behavior in issues facing chemists including an understanding of safe handling of chemicals, environmental issues and key issues facing our society in energy, health and medicine.

CO6: Students will be able to explain why chemistry is an integral activity for addressing social, economic, and environmental problems.

CO7: Students will be able to function as a member of an interdisciplinary problem solving team.

Organic Chemistry

CO1: Know and recall the fundamental principles of organic chemistry that include chemical bonding, nomenclature, structural isomerism, stereochemistry, chemical reactions and mechanism.

CO2: Name the functional groups and different class of organic compounds.

CO3: Recognize the basic practical skills for the synthesis and analysis of organic compounds.

CO4: Synthesis, classification and isolation of different natural products

CO5: Design, synthesize and characterize drug molecules and polymers

CO6: Predict the reactivity of an organic compound from its structure.

CO7: Develop basic skills for the multi-step synthesis of organic compounds.

CO8: Justify a reasonable mechanism for a chemical reaction.

CO9: Write comprehensive reports on experiments such crystallization, distillation, synthesis, hydrogenation, isolation and filtration processes.

Physical Chemistry

CO1: Chemical reactions and strategies to balance them.

CO2: The relative quantities of reactants and products.

CO3: The fundamental properties of atoms, molecules, and the various states of matter.

CO4: The electronic structure of atoms and its influence on chemical properties.

CO5: Molecular geometries of selected molecular species.

CO6: The fundamentals of acid/base chemistry, including pH calculations, buffer behavior, and acid/base titrations.

CO7: The energy and speed of chemical reactions.

CO8: Unit conversions and their importance in clinical medicine.

CO9: Molecular interactions and chemical reactions in the body.

CO10: The scientific method of collecting and analyzing information.

CO11: The basic (colligative) properties of solutions.

CO12: The fundamentals of acid/base equilibria, including pH calculations, buffer behavior, acid/base titrations, and their relationship to electrophiles and nucleophiles.

CO13: The thermodynamic and kinetic forces involved in chemical reactions which determine how much and how soon products are formed.

CO14: The basics of electrochemistry, and the relationship of electrical parameters to thermodynamic and stoichiometric parameters.

CO15: Current bonding models for simple inorganic and organic molecules in order to predict structures and important bonding parameters.

CO16: General periodicity patterns of (organic/inorganic) molecules, and the ability to design synthetic approaches to such species.

CO17: General chemical equilibria.

CO18: Solubility and complex ion equilibria.

CO19: Basic aspects of nuclear chemistry.

Chemistry (M.Sc.)

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CO6: Predict the reactivity of an organic compound from its structure.

CO7: Develop basic skills for the multi-step synthesis of organic compounds.

CO8: Justify a reasonable mechanism for a chemical reaction.

CO9: Write comprehensive reports on experiments such crystallization, distillation, synthesis, hydrogenation, isolation and filtration processes.

Physical Chemistry

CO1: The relationship between microscopic properties of molecules with macroscopic thermodynamic observables

CO2: The derivation of rate equations from mechanistic data

CO3: The use of simple models for predictive understanding of physical phenomena associated to chemical thermodynamics and kinetics

CO4: The limitations and uses of models for the solution of applied problems involving chemical thermodynamic and kinetics

CO5: Concepts in thermodynamics, different thermodynamic quantities such as heat and work and how they are measured, related or transformed from one to the other

CO6: States of matter and how they depend on temperature and pressure as well as how they co-exist in phase equilibria

CO7: Chemical equilibrium and its relationship with thermodynamic quantities.

CO8: The preparation for each experiment by studying lab handouts and links therein

CO9: Safety requirements and lab skills to perform physico-chemical experiments

CO10: How to keep records of instruments, parameters, and experimental observations

CO11: Reporting of experimental results (including error analysis) in a publication-style (journal paper)

CO12: An appreciation for modern problems and scientific controversies in physical chemistry

CO13: Key spectroscopic techniques including FTIR, UV-vis absorption, luminescence, laser methods.

CO14: The use of chemistry software programs to model energy potentials and vibrational levels of molecules.

CO15: The use of standard vacuum and cryogenic techniques used in physic-chemical experiments.

Analytical chemistry

CO1: The course gives an introduction to inorganic and organic analytical chemistry, including basic analytical methods. The laboratory course gives the students experience with quantitative methods of working.

CO2: Explain the theoretical principles and important applications of classical analytical methods within titration (acid/base titration, complexometric titration, redox titration), and various techniques within gravimetric and coulometric methods.

CO3: Explain the theoretical principles of selected instrumental methods within electroanalytical and spectrometric/spectrophotometric methods, and main components in such analytical instruments.

CO4: Explain the theoretical principles of various separation techniques in chromatography, and typical applications of chromatographic techniques.

CO5: Assess and suggest a suitable analytical method for a specific purpose, and evaluate sensitivity, important sources of interferences and errors, and also suggest alternative analytical methods for quality assurance.

CO6: Performing risk assessment of chemical experiments and chemical analytical activity

CO7: Performing classical analytical experiments, and make observations and assessments of important factors that could affect the analytical result.

CO8: Be familiar with calculations in analytical chemistry, be able to calculate titration errors for method evaluation, and perform statistical evaluation of results from classical and instrumental chemical experiments and analyses.

CO9: Make scientific reports from chemical experiments and present the results in a transparent manner.

CO10: Understand how different sampling techniques and instrumental methods can be used in speciation studies.

Chemistry of Life Science

CO1: Recall the structure and properties of the major types of biological organic molecules, and be able to describe the relationships between structure, properties and functions;

CO2: Describe organic reaction mechanisms that impact on biochemical processes.

CO3: Discuss the fundamental chemistry of elements of biological importance, their significance to biological processes, and understand the biological transport and partitioning of solutes, hydrogen ions and water.

CO4: Describe the kinetics of reactions and diffusion processes;

CO5: Extend the appreciation of fundamental principles of chemistry into areas of major importance for the life sciences.

CO6: Safely and efficiently perform simple chemical laboratory processes;

CO7: Conduct, record, analyse and interpret chemical observations and measurements;

CO8: Effectively communicate the results, at a consolidating level;

CO9: Develop your scientific problem-solving skills.

Zoology (B.Sc.)

CO1: On successful completion of this subject the student will have knowledge about invertebrates, vertebrates and faunal diversity.

CO2: Can serve as IFS and PFS. As well as Lab assistants in laboratories, university and colleges.

Zoology (M.Sc.)

Animal Physiology

CO1: Knowledge will develop Animal physiologist, Zoologist and Toxicologist.

Animal Behavior

CO1: Migration Investigator,

Fisheries

CO1: Fisheries Inspector, ADF, Aqua-culturist, Pearl Fisheries, Chunk fisheries and Shell fisheries.

Entomology

CO1: Apiculturist, Seri-culturist, Lac culture, Prawn fisheries, Shrimp culture,

Toxicology

CO1: Toxicologist, Environmentalist, Scientist in CPCB, SPCB,

Wildlife Conservation

CO1: Wild life advisor and Conservationist in deferent organization (WWF, IUCN, Traffic India, BNHS) and Forest Department of deferent Stats, state Biodiversity Boards.

M.Sc. (Biotechnology)

Biomolecules

CO1: The course explores the chemistry of living organisms and that of their biological processes.

CO2: It deals with the chemical combinations and reactions that takes place because of the biological processes such as growth, reproduction, metabolism, heredity

Microbiology

CO1: This course enables students with detailed understanding of micro-organisms, their role in biotechnology and other relevant industries.

Molecular Cell Biology

CO1: It deals with the study of the structure and function of living systems at the molecular level. It focuses mainly on DNA, RNA, Protein Synthesis and their regulatory mechanism. A molecular biologist aims to understand the functions of cells at molecular level.

Biotechniques

CO1: The M.Sc. students will be familiarized with original laboratory methods, related technical tools, and methods-oriented review articles that are of broad interest to professional life scientists, as well as to scientists from other disciplines (e.g., chemistry, physics, computer science, plant and agricultural science and climate science) interested in life science applications for their technologies.

Principles of Genetic Engineering

CO1: To understand the general principles of gene organization and expression in prokaryotic and eukaryotic organisms, basic pathways and mechanisms in biological energy transduction and cell cycle control and relate properties of cancerous cells to mutational changes in gene function.

Biosafety, Computer Application & Biostatistics

CO1: On completion of this course the students will be acquainted with basics of computer applications, biosafety guidelines and measures to be followed and basics of biostatistics and statistical analysis of research data

Immunology & Immunotechnology

CO1: It deals with the study of the tissues, cells and molecules involved in host defence mechanisms. Immunologists attempt to understand how the immune system develops, how the body defends itself against disease, and what happens when it all goes wrong.

Enzyme Technology

CO1: To enable the students to understand advanced concepts related to working of enzymes, their properties and application in various industries and research.

Animal Biotechnology

CO1: To enable the students to understand the molecular biology techniques which were used to genetically engineer (i.e. modify the genome of) animals in order to improve their suitability for pharmaceutical, agricultural or industrial applications.

CO2: Animal biotechnology has been used to produce genetically modified animals that synthesize therapeutic proteins, have improved growth rates or are resistant to disease

Molecular Genetics

CO1: To understand the general principles of gene organization and expression in prokaryotic and eukaryotic organisms, basic pathways and mechanisms in biological energy transduction and cell cycle control and relate properties of cancerous cells to mutational changes in gene function.

Environmental Biotechnology

CO1: Environmental biotechnology is biotechnology that is applied to and used to study the natural environment. In nutshell, environmental biotechnology is the integration of natural and engineering sciences to achieve the application of organisms, cells, parts thereof and molecular analogues for products and services.

Industrial Biotechnology

CO1: This course aims to introduce various industries where biotechnology is used. It enables students to understand the concept of application of biotechnology in different industries, fermentation and scale-up.

Food Biotechnology

CO1: To enable the students to learn application of biotechnology in food industry.

Plant Biotechnology

CO1: The course will enable the students to acquire knowledge about various techniques like micropropagation, single cell culture, suspension culture, protoplast culture, hairy root culture and various techniques of recombinant DNA technology to produce genetically modified organisms with novel characters.

Bioinformatics, Bioethics and IPR

CO1: This course provides knowledge about basics of bioinformatics and its applications, bioethics and different bioethics regulatory agencies. The students will also learn about IPR, its types and differences, and applications.

Genomics and Proteomics

CO1: Genomics is the new science that deals with the discovery and noting of all the sequences in the entire genome of a particular organism. Likewise, Proteomics helps in understanding the structure and function of different proteins as well as protein-protein interactions

English (Ph.D.)

English Literature

CO1: To understand the basics of different Literary terms and theories.

CO2: To understand various research in the English Literature.

CO3: To develop the new perspective towards literature.

Writing in different field as expatriate literature/Indian English Writing

CO1: To understand the Writing in Literature.

CO2: To understand Indian writers in the field of English Literature.

CO3: To understand current Indian Issues to discuss.

Communication Skills and Personality Development Classes in UG and PG

CO1: To understand the basics of different Soft Skills.

CO2: To know various stages of Personality developments

CO3: To Develop Communication Skills.

CO4: To learn and practice verbal and non-verbal communication along with managerial skills.

Mathematics (BCA):

Real Analysis

CO1: This provides the knowledge of different kind of properties of functions defined on different sets.

CO2: This also provides the knowledge of how to use these properties to solve real world problems.

Algebra

CO1: Enables to students to understand different properties of a set and different kind of relationships between different kinds of sets.

CO2: It improves the analytic approach and develops reasoning power of students.

Discrete Mathematics

CO1: This provides a study of mathematics used in computer and machines

CO2: It enables student to understand the language of machines.

Differential Equations

CO1: It enables students of solve different kind of differential equations which appears in different branches of science and engineering.

CO2: It enables students to formulate differential equations of real world problems.

Numerical Methods

CO1: It enables students to learn tools to solve different kind of numerical problems arriving in science and engineering.

CO2: It improves numerical problem solving ability of students.

Mathematics (B.Sc. non-medical):

Real Analysis

CO1: This provides the knowledge of different kind of properties of functions defined on different sets.

CO2: This also provides the knowledge of how to use these properties to solve real world problems.

Algebra

CO1: Enables to students to understand different properties of a set and different kind of relationships between different kinds of sets.

CO2: It improves the analytic approach and develops reasoning power of students.

Differential Equations

CO1: It enables students of solve different kind of differential equations which appears in different branches of science and engineering.

CO2: It enables students to formulate differential equations of real world problems.

Discrete Mathematics

CO1: This provides a study of mathematics used in computer and machines

CO2: It enables student to understand the language of machines.

Complex Analysis

CO1: This provides the knowledge of different kind of properties of complex functions defined on different sets.

CO2: This also provides the knowledge of how to use these properties to solve real world problems.

Mathematics (M. Sc):

Real Analysis:

CO1: This provides the knowledge of different kind of properties of functions defined on different sets.

CO2: This also provides the knowledge of how to use these properties to solve real world problems.

Algebra:

CO1: Enables to students to understand different properties of a set and different kind of relationships between different kinds of sets.

CO2: It improves the analytic approach and develops reasoning power of students.

Differential Equations:

CO1: It enables students of solve different kind of differential equations which appears in different branches of science and engineering.

CO2: It enables students to formulate differential equations of real world problems.

Discrete Mathematics:

CO1: This provides a study of mathematics used in computer and machines

CO2: It enables student to understand the language of machines.

Complex Analysis:

CO1: This provides the knowledge of different kind of properties of complex functions defined on different sets.

CO2: This also provides the knowledge of how to use these properties to solve real world problems.

Differential Geometry:

CO1: It provides the knowledge of geometric properties of higher dimensional mathematical objects.

CO2: This also provides opportunity to visualize and understand the properties of higher dimensional mathematical objects.

Topology :

CO1: Enables to students to understand the properties of higher dimensional mathematical objects.

CO2: This also provides opportunity to visualize higher dimensional mathematical objects.

Functional Analysis:

CO1: This provides the knowledge of function defined on more complicated sets and defined on higher dimensional objects

CO2: It also provides different kind of properties of these functions.

Integral Transforms:

CO1: It enables students to learn tools to solve different kind of numerical problems arriving in science and engineering.

CO2: It also improve numerical problem solving capacity of students.

Discrete Mathematics:

CO1: This provides a study of mathematics used in computer and machines

CO2: It enables student to understand the language of machines.

School of Law

Graduate Courses (BALLB, BCOM LLB & LLB):

Constitutional and Human Rights Law

CO1: To understand the basics of State what are the main institutions of the State and the main functions of each.

CO2: To understand the basics of rights and duties of the citizens.

CO3: an understanding of the principles and institutions of international human rights law, including their origins, assumptions, contents, limits and potential.

CO4: To understand the basic of understand the historical growth of the idea of human rights and demonstrate an awareness of the international context of human rights

Criminal Laws

CO1: To understand the major areas of the criminal justice system: policing, courts, law, and corrections.

CO2: Recognize the importance of federal and state statutory law, case law, and constitutional law as it constrains the police, the courts, and corrections.

CO3: Demonstrate the relationship between crime and the various correlates, such as race, gender, age, social class, and social institutions.

CO4: Examine the special issues of minorities and females in every aspect of the criminal justice system.

Administrative law

CO1: Understand the principles of judicial review of administrative action at both the State and Federal levels of government.

CO2: Understand some of the way in which administrative action can be review of administrative action, and the constitutional protection of such review.

CO3: Understand the limits on the powers of the courts to engage in judicial review of administrative action, and the constitutional protection of such review.

CO4: Be aware of some of the current controversies and trends in the area of administrative law: have the capacity to think critically about administrative law, its underpinning values, and its impact on administrative decision making.

International Law

CO1: An understanding of the nature of the international legal system

CO2: An understanding of the law creating processes and the doctrines of International Law

CO3: Knowledge of the relationship between International Law and domestic law

CO4: An understanding of the development of international law in response to contemporary challenges and the key issues of policy which lie behind the law

CO5: Knowledge of the practice of the exercise by the participants of rights in this field, including claims, protests, treaties and the peaceful settlement of disputes.

Civil Law

CO1: Explain the purpose and function of civil procedure law and the structure of the civil court organization and the duties of professionals that work at the courts.

CO2: Explain the competent and jurisdiction of the civil courts.

CO3: Explain the competent of the general and special civil courts.

CO4: distinguish the differences between the general and special jurisdiction rules.

Corporate Law

CO1: To encourage the development of students' skills in legal reasoning and analysis through study of statutes, case law and regulatory practice relating to Company Law.

CO2: To explain the legal nature and significance of limited liability and the price which those using a company as a business structure are required to pay for it.

CO3: To facilitate an appreciation of the legal basis of the control exercised by a company's board of directors over a company's management and affairs, the legal limitations and constraints on this control and the effectiveness of these limitations and constraints in practice.

CO4: To provide students with an awareness of current policy trends and developments in Company Law.

Personal Law

CO1: Personal laws governing family relations such as marriage, separation (divorce), maintenance, guardianship and custody, adoption, etc.

CO2: the status of women and children in family relations law with a view to ensure greater protection of constitutional rights of these groups in family law administration.

LLM

Constitutional and Human Rights Law

CO1: To understand the basics of State what are the main institutions of the State and the main functions of each.

CO2: To understand the basics of rights and duties of the citizens.

CO3: an understanding of the principles and institutions of international human rights law, including their origins, assumptions, contents, limits and potential.

CO4: To understand the basic of understand the historical growth of the idea of human rights and demonstrate an awareness of the international context of human rights

Criminal Laws

CO1: To understand the major areas of the criminal justice system: policing, courts, law, and corrections.

CO2: Recognize the importance of federal and state statutory law, case law, and constitutional law as it constrains the police, the courts, and corrections.

CO3: Demonstrate the relationship between crime and the various correlates, such as race, gender, age, social class, and social institutions.

CO4: Examine the special issues of minorities and females in every aspect of the criminal justice system.

Personal Law

CO1: Personal laws governing family relations such as marriage, separation (divorce), maintenance, guardianship and custody, adoption, etc.

CO2: the status of women and children in family relations law with a view to ensure greater protection of constitutional rights of these groups in family law administration.

Civil Law

CO1: Explain the purpose and function of civil procedure law and the structure of the civil court organization and the duties of professionals that work at the courts.

CO2: Explain the competent and jurisdiction of the civil courts.

CO3: Explain the competent of the general and special civil courts.

CO4: distinguish the differences between the general and special jurisdiction rules.

Corporate Law

CO1: To encourage the development of students' skills in legal reasoning and analysis through study of statutes, case law and regulatory practice relating to Company Law.

CO2: To explain the legal nature and significance of limited liability and the price which those using a company as a business structure are required to pay for it.

CO3: To facilitate an appreciation of the legal basis of the control exercised by a company's board of directors over a company's management and affairs, the legal limitations and constraints on this control and the effectiveness of these limitations and constraints in practice.

CO4: To provide students with an awareness of current policy trends and developments in Company Law.

Administrative law

CO1: Understand the principles of judicial review of administrative action at both the State and Federal levels of government.

CO2: Understand some of the way in which administrative action can be review of administrative action, and the constitutional protection of such review.

CO3: Understand the limits on the powers of the courts to engage in judicial review of administrative action, and the constitutional protection of such review.

CO4: Be aware of some of the current controversies and trends in the area of administrative law: have the capacity to think critically about administrative law, its underpinning values, and its impact on administrative decision making.

School of Management

BHMCT

This course is designed to provide an understanding of the Service Industry & its origin, clear & complete guidelines on service basics, skill building among the students to achieve customer delight, advanced and practical inputs on organizing/planning/executing & managing Restaurant operation, “live” industry practices are incorporated for a “hands on” student understanding.

By the end of this course the student should be able to:

CO1: Explain the growth of the Hotel Industry worldwide.

CO2: Exhibit the ability to organize & explain how different types of Outlets meet the needs of different guests.

CO3: Analyze the range of services provided by the Hotels to meet guest expectations.

CO4: Demonstrate a range of operational skills for specific activities.

CO5 Compare the components of different types of meal & devise a classical menu

Travel and Tourism Management

This course is designed to provide an understanding of the Tourism Industry, its origin, clear & complete guidelines on basics, skill building among the students to achieve customer delight, advanced and practical inputs on organizing/planning/executing & managing Tour operations,

By the end of this course the student should be able to:

CO1: Explain the origin & growth of the Tourism Industry worldwide.

CO2: Operate and handle queries on GDS systems like (Amadeus, Galileo etc.)

CO3: Exhibit the ability to organize & explain how different types of Outlets meet the needs of different guests.

CO4: Demonstrate a range of operational skills for specific activities.

Bachelor & Master of Business Administration

Marketing

CO1: To Understand the impact of changing global, Political, Economic, Competitive, Environmental, Cultural and Social Systems on marketing strategy development.

CO2: To understand the dynamic of the global business environment from a competitive and economic perspective.

CO3: To develop comprehensive strategic and tactical plans for an organization and work independently and collaboratively in inter and multidisciplinary and diverse environments.

Business laws and ethics

CO1: To ensure compliance of legal formalities with values and ethics in the process of Business administration, Governance and corporate social responsibility.

CO2: To be familiar with basic legal framework on special contracts; and conversant with rights, duties and obligations of the parties concerned under each of the Special Contracts.

CO3: To be familiar with provisions with regard to performance of a contract and also to be conversant with circumstances which lead to Breach of contract and remedies in the event of breach of a contract.

CO4: To understand from practical perspective how awareness of Consumers rights for getting protection from defects of goods and deficiencies from services is brought out in the society and community

Business communication

CO1: It gives an understanding of the “Process of Communication in an organization” It will help them to identify the ‘Barriers of Communication’ and help them to enhance their presentations skills

CO2: It administers an understanding of the “Framework for Managing Investor Relations, & ways and means of Managing Power” and enable the students to augment their report writing skills

It applications for management

CO1: To identify various types of Information System for Business and apply Information Systems in business

CO2: Define databases & identify types of Databases and understand the need for Computer Security & Security Mechanisms

CO3: Learn about E-Commerce & its Applications and learn the Process of E-payments and emerging trends in Computing

Human resource management

CO1: Understand and apply the policies and practices of the primary areas of HRM including staffing, training and compensation.

CO2: Understand the importance of HR's and their effective Management in Organizations.

CO3: Outline the nature and sources of conflict and explain the different strategies and approaches used in the resolution of conflict.

Financial management

CO1: Understand the role of the financial manager in growth of the firm by considering the agency relationship.

CO2: Gain the knowledge on application of different techniques of capital budgeting under riskless and risky conditions for the investment decisions.

CO3: Build the optimum capital structure to take the optimum financing decisions. Gain the knowledge on the different concepts of cost of capital.

CO4: Understand the different methods of corporate restructuring and the principles of good governance.

International business

CO1: Understanding cultural and political environment in the light of International trade theories.

CO2: What is the rationale for government intervention in the forms of trade regulation? Understanding major trading blocks: EU, NAFTA, ASEAN, SAARC.

CO3: To gain knowledge of structure and functions of TRIPS, TRIMS, WTO.

CO4: Differentiate the various global market entry strategies- Exporting, Licensing, Franchising etc.

Financial markets and services

CO1: Know about the financial market structure and participants in the markets and gain knowledge on the different financial services which are available in India.

CO2: Know the role of merchant bankers in providing the financial and non financial services.

CO4: Understand the Hire purchase and Lease assistance to micro small, small, medium and large scale business units.

CO5: Understand the different financial services like factoring, credit rating methods

Retail management

CO1: The role and relevance of retail Management Types and trends of retailing

CO2: The difference between the organized and unorganized retail sector and CRM Process in retailing and legal compliances

CO3: The role and importance of international retailing, Retail pricing strategies, Retail segmentation and relationship marketing

Financial risk management

CO1: Identify the different sources of risk affecting the companies and to state the different risk management approaches.

CO2: Integrated approach to corporate risk management. The types of players in derivatives markets.

CO3: Understanding of Different types of products available in derivatives market. Valuation of futures & forward contract.

Compensation management

CO1: Gain knowledge of different components of compensation

CO2: Understand different monetary and non-monetary benefits of compensation Identify international components of compensation

CO3: Understand various factors required to design compensation Acquire the knowledge of different work schedules.

Research methodology

CO1: Ability to prepare students for quality research and publication and to inspire for writing research papers for seminars, conferences, research journals.

CO2: Capable to orient towards the importance of research in the field of humanities.

Operations research

CO1: Ability to take better and quicker decision and to coordinate all the decision of the organization.

CO2: Ability to control his subordinates and to improve the productivity of the organization.

Bachelor of Business Administration

Principles of management

CO1: To evaluate the global context for taking managerial actions of planning, organizing and controlling and assess global situation, including opportunities and threats that will impact management of an organization..

CO2: To integrate management principles into management practices and to analyse managerial practices and choices relative to ethical principles and standards.

Business mathematics

CO1: Acquire knowledge about basic of Algebra linear and quadratic equation. Ability to calculate Bills and payroll system of different department and branches

CO2: To acquire knowledge about solving problems related to law operation and compound interest.

Business accounting

CO1: Ability to demonstrate knowledge in setting up a computerized set of accounting books for profit entity.

CO2: Ability to demonstrate knowledge of various advanced accounting issues related to Financial Accounting within a global and or ethical framework

CO3: Proficient to apply accounting concepts and methods to interpret financial statements for evaluating the financial position and performance of organizations

Micro economics

CO1: Design competitive strategies including costing, pricing, product differentiation, and market environment according to the natures of products and the structures of the markets.

CO2: Understand the four basic market models of perfect competition, monopoly, monopolistic competition, and oligopoly, and how price and quantity are determined in each model.

CO3: Derive the equilibrium conditions for cost minimization and profit maximization. Analyze the demand and supply conditions and assess the position of a company

Business communication

CO1: Ability to develop importance of communication in personal/professional life and achieve efficiency in understanding the opportunities in the field of communications

CO2: Acquire competence in oral, written and non verbal communication and capable to rectify common mistake of communication

Introduction to computers

CO1: Understand the fundamental hardware components that make up a computer's hardware and the role of each of these components

CO2: Describe some examples of computers and state the effect that the use of computer technology has had on some common products.

Financial management

CO1: Development of aptitude to analyze financial statements using standard financial ratios of liquidity, activity, debt, profitability, and market value.

CO2: Acquire the expertise of measures of cost of capital and financial leverage to form long-term financial policies for business and acquire knowledge of capital investment decisions and financial policies to business valuations.

Macro economics

CO1: Understand the implications of interference in a market economy, including government policy

CO2: Understand the roles of fiscal and monetary policy in fighting recessions & inflation and also understand factors that contribute to and detract from long-term economic growth.

Organizational behaviour

CO1: Acquire the knowledge of organization in students helpful to them to make their careers in business firms.

CO1: Develop the professional skills to handle the departments in any of the business organizations and create career opportunity to adjust as the business managers in national and international firms.

Cost and management accounting

CO1: Develop and demonstrate the need for a balance between financial and non-financial information in decision making, control and performance evaluation applications of management accounting;

CO2: Acquire the knowledge to evaluate complex ideas and tolerate ambiguity in managerial and organizational problem-solving.

Business statistics

CO1: Capable to analysis for any product, even financial products and analyse to compare alternative scenarios.

CO2: Ability to use in statistics or summarizing the data and acquire knowledge of market research and product development.

Human resource management

CO1: Demonstrate an understanding of the human resources management process and its importance to organizational effectiveness.

CO1: Acquire an understanding of processes and tools commonly used to attract, develop and retain a high performance workforce and to identify and appreciate the significance of the ethical issues in HR.

Marketing management

CO1: Ability to Getting information regarding demand and Planning production accordingly.

CO2: Availability of various products for use and reduction in distribution cost.

Production & operations management

CO1: Acquire to understand about industries operates his day to day operations and ability to elimination of wastage of time, labour and money.

CO2: Acquire competence in handling inventory and supply chain management.

Business laws

CO1: Develop the understanding in students to create and kind of business contract and acquire skill in students to handle the legal matters related with the business.

CO2: Proficiency to make partnership agreements as the laws and regulations of companies act.

Quality management

CO1: Acquire knowledge about how to improve the business operations and productivity and to learn how to reduce cost and use the scarce resources.

CO2: Capable to achievement of stability and reliability regarding the techniques, equipment, and resources being used in a project.

Foundations of international business

CO1: To identify and evaluate the complexities of international business and globalization from home versus host-country, and regional, cultural perspectives.

CO2: Ability to analyze the relationships between international business and the political, economic, legal and social policies of countries, regions and international institutions.

Management information system

CO1: Understand the leadership role of Management Information Systems in achieving business competitive advantage through informed decision-making.

CO2: Apply Management Information Systems knowledge and skills learned to facilitate the acquisition, development, deployment, and management of information systems.

Environment studies

CO1: Ability to work and learn effectively and constructively as a member of a team at field stations or in remote environmental sites on land or at sea.

CO2: Ability to apply quantitative reasoning skills to environmental problems including basic calculations related to energy, water, and air issues and the use of statistical methods in data analysis and argumentation

Business environment

CO1: Ability to demonstrate progressive learning in the elements of managerial decision making, including planning, directing and controlling activities in a business environment.

CO2: Ability to use personal and ethical frameworks to help them respond to ethical dilemmas. Acquire knowledge of strong organizational skills and a capacity for responsive and timely work.

Project management

CO1: Acquire the knowledge to conduct project planning activities that accurately forecast project costs, timelines & quality and develop a strong working knowledge of ethics & professional responsibility.

CO2: Capable to demonstrate effective organizational leadership & change skills for managing projects, project teams & stakeholders.

Advertising and sales management

CO1: Analyze the expanding environment of media and communication techniques and to assess the strengths, weaknesses, opportunities and threats (SWOT) of different kinds of promotional campaigns.

CO2: Examine the importance of market segmentation, position and action objectives to the development of an advertising and promotion program.

Marketing research

CO1: Ability to determine customer attitudes and preferences and also capable to learn about competitive products

CO2: Acquire knowledge of Test product features and proficient to determine market size and growth potential

Corporate strategy

CO1: Acquire the knowledge of Strategic research - identifying, gathering, and verifying relevant data.

CO2: Develop expertise of evaluating and analyzing facts to identify opportunities and threats in the external environment and strengths and weaknesses within the organization (i.e., perform a situation/SWOT analysis).

Services marketing

CO1: Acquiring the knowledge to understand the synergy of marketing helpful to create service productivity.

CO2: Capable to understand the service leadership and culture. and develop the professional skills to become the marketing manager.

Bachelor & Master of Commerce

Business Organisation and Management

- CO 1 Use business terms and concepts when communicating.
- CO 2 Explain the financial concepts used in making business decision.
- CO 3 Use effective communication skills to promote respect and relationship.
- CO 4 Utilize information by applying a variety of business and industry software and hardware to major business function.
- CO5 Demonstrate a basic understanding of business management.

Financial Accounting

- CO1 Described various accounting concepts and double entry system of book keeping.
- CO2 Understands on how to deal with adjustments in Final accounts and also about preparation of accounting books for Non-Profit Organization.
- CO3 Acquired knowledge on various types of errors and on how to rectify those errors.
- CO4 Describe about preparation of Bank Reconciliation statement.
- CO5 Calculation of Depreciation under Straight line and Write down value method.
- CO6 Determination of insurance claim on fire accident.
- CO7 Determination of profit / loss under Statement of affairs and Conversion method for the concerns having singly entry system of book keeping.

Computer Fundamentals

- CO 1 Understand the meaning and basic components of a computer system.
- CO2 To learn generation, classification and application of computers.
- CO 3 Knowledge of computer equipment, including both hardware and software.
- CO 4. To learn input devices and output devices in detail.
- CO 5. To learn memory and its types in detail.
- CO 6. Introduced students to information, its need, use, characteristics and level of information.
- CO7. Use word-processing software (MS-Word) to solve basic information systems problems.

Business Communication

CO1 Described about principles of effective communication.

CO2 Classifying the different kinds of business letters and its purpose.

CO3 Acquired knowledge about requirement of different types of correspondence and how to write the same.

CO4 Analyses and preparation of reports & minutes of meeting.

CO5 Described different forms of communication, its importance & need– Fax, E-mail etc.

Business Economics

CO1 Understand the scope and importance of business economics.

CO2 Describe about demand, supply concepts and demand forecasting.

CO3 Understand the concept of law of diminishing marginal utility and indifference curve.

CO4 Describe about variable proportion, law of returns to scale, BEP and economies of scale.

CO5 Understand about market structure and Price and output determination of different market.

Fundamentals of Money and Banking

CO 1 Students will understand the role of money and banks in the broader economy.

CO 2 Specifically, students should gain an understanding of the unique role of banks in the financial system.

CO 3 Students will also learn the relevance of the Federal Reserve and related central banking topics, including the causes, policy responses, and lessons associated with the current financial market crisis

Quantitative Techniques

CO1. Demonstrate the role of quantitative techniques in the field of business/industry, illustrate different types of equations, solve equations and system of equations, understand the concept of sets, illustrate and apply basic set operations.

CO2. Explain the rules for calculating derivatives, uses and application in calculating inter-relationship among total, marginal and average cost and revenue, calculate maxima, minima, elasticity, decide the optimal level of production for a firm.

CO3. Demonstrate the rules for calculating integration, describe the importance and application of integration in consumers' and producers' surpluses, total revenue and cost.

CO4. Illustrate matrix operation, minors, cofactors, use cofactor method to find inverse of a matrix, use Cramer's rule to solve systems of equations.

CO5. Demonstrate knowledge of basic concept of linear program, duality, capacity to solve linear programming problems', familiar with the basic techniques most commonly used in economic problems.

Advanced Financial Accounting

CO1 Described about preparation of branch accounts, inter branch and head office accounts.

CO2 Acquired knowledge on preparation of departmental accounts with respect to apportionment of overheads.

CO3 Calculation of interest on hire purchase and installment system.

CO4 Described about new profit sharing ratio and calculation of profit during admission of a new partner and retirement of partner.

CO5 Computing the accounting treatment during death of a partner and dissolution of a partner.

Environment Science

CO1 Understand the concepts and methods from ecological and physical sciences and their application in environmental problem solving

CO2 Appreciate the ethical, cross-cultural, and historical context of environmental issues and the links between human and natural systems.

CO3 Apply systems concepts and methodologies to analyze and understand interactions between social and environmental processes.

CO4 Reflect critically about their roles and identities as citizens, consumers and environmental actors in a complex, interconnected world.

Mercantile Law

CO1 Understand the legal rules regarding contract.

CO2 Knowledge on rules necessary for legal enforcement.

CO3 Awareness of rules regarding signing of the contract.

CO4 Describe about different kinds of performances of the contract.

CO5 Identification of rules and regulations of sale of goods act and Partnership Act.

Corporate Accounting

CO 1 Enabling the students to understand the features of Shares and Debentures

CO 2 Develop an understanding about redemption of Shares and Debenture and its types

CO 3 To give an exposure to the company final accounts

CO 4 To provide knowledge on Goodwill

CO 5 Students can get an idea about internal reconstruction

E- Commerce

CO1 Understand the concept of E-Commerce and Describe the opportunities and challenges offered by E-Commerce

CO2 Able to handle electronic payment technology and requirements for internet based payments

CO3 Understand the categories of E-Commerce and understand the different applications of E-Commerce

CO4 To understand and identify security issues of E-Commerce CO-V Understand the concept of WEB Based Business Understand the M-Commerce applications

Organizational Behaviour

CO 1 To equip the students with the basic idea and introduction on organizational behavior as a concept

CO 2 To give a light on the concept and difference theories on motivation

CO 3 Explain and helps the students to gain more knowledge on Group Behavior

CO 4 To introduce the concept of leadership

CO 5 Understand the concept of conflict management

Banking Theory Law And Practice

CO1 Understand and aware about the process of banking.

CO2 Comprehend the knowledge about growth of the Indian banking system.

CO3 Describe the functions of RBI.

CO4 Grasp about E-Banking in detail.

Income Tax

CO1 To equip the students with thoughts and points on assessment of firms

CO2 Impart knowledge on the provisions of Income tax law and practice and make students compute the assessment practices under the various heads of income.

CO3 Acquire knowledge about taxation, Rates of tax & Residential status.

CO4 Described about the provisions of salary income, House property & business or profession and their computation.

CO5 Enhance assessment of Individuals filing of returns and PAN.

CO 6 Understand the concept of deductions under the section 80C.

Cost Accounting

CO1 Understand the concepts of cost accounting and to expertise in presenting cost center & profit center.

CO2 Proficiency in preparing cost sheet with & without stock adjustment.

CO3 Gain expert knowledge on Materials cost and its methodologies.

CO4 Computation of wages under different methods of wage payment.

CO5 Explore in depth knowledge on classification of overheads.

Principles of Auditing

CO1 Described about the concept of auditing, types and methods of auditing.

CO2 Acquired knowledge about vouching of cash & credit transaction, verification of assets & liabilities.

CO3 Described about preparation of different methods & auditors responsibility regarding depreciation & reserves.

CO4 Comprehend the knowledge about appointment of different types of auditor, their rights and duties.

CO5 Acquired knowledge about audit in EDP environment.

Corporate Law

CO 1 Know about the concept of company and shares.

CO2. Know about the company law in the India.

CO3. Understand the use of the memorandum of association and article of association in a company, they also learn from this course.

CO4. Use of prospectus in a company.

CO5. Understand the relationship between company and debenture holders.

Business Ethics and Corporate Governance

CO 1 Compare and analyse the corporate governance issues involved in business and the workplace

CO2. Compare and analyse the role of stakeholders and corporate managers' moral obligations in business decision making.

CO3. Apply regulatory requirements to develop appropriate board and committee functions and structures.

CO4. Apply corporate governance best practice principles and recommendations to achieve appropriate business practice.

CO5. Analyse and explain economic, social and environmental sustainability issues relating to business practice

Business Environment

CO1 Describe the concept of different types of environment.

CO2 Gained knowledge on business and strategic decision.

CO3 Acquired knowledge on provisions of Indian constitution pertaining to business.

CO4 Comprehend the knowledge about the social responsibility of business.

CO5 Acquired knowledge about GDP, Financial environment, RBI stock exchange, IDBI, NBFC.

Management Accounting

CO 1 To enlighten the students thought and knowledge on management Accounting

CO 2 Helps to give proper idea on financial statement analysis in practical point of view

CO 3 To introduce the concept of fund flow and cash flow statement

CO 4 To provide knowledge about budget control keeping in mind the scope of the concept

CO 5 To develop the know-how and concept of marginal costing with practical problems

Indian Economy

CO1 Understand the Economic development and economic growth.

CO2 Describe about poverty, population and unemployment.

CO3 Acquired knowledge about the agriculture and Public distribution System.

CO4 Describe about the small scale, large scale and cottage industries.

CO5 Understand about the 1 to 12th five year planning in India.

Operation Research

CO1 Describe the Concept of Operation Research.

CO2 Analyse the various techniques of solving problem.

CO3 Calculation of LPP and its limitations.

CO4 Applications of LPP in business and the students will be able to solve Problems using simplex method.

CO5 Computation of transportation problem and application of Game theory.

Subject Name: Entrepreneurship

CO1 To aiming to develop students about Entrepreneurship development

CO2 To create an awareness on various Entrepreneurship Development Programme

CO3 To enable them to understand project formulation

CO4 To familiarize the students with EDP schemes

CO5 To give an introduction about MSME, EDI and other training institutes in entrepreneurship

Security Analysis and Portfolio Management

CO1 To help them to understand security analysis

CO2 To create awareness about risk and return of different investments

CO3 To enlighten the evolution of securities and derivatives

CO4 To make them understand the investment decisions and portfolio performance

M.Com

Accounting for managerial decision

CO1: this subject provides detailed insight into accounting regulations and accounting aspects of companies.

CO2: to know about the stages and process of standard setting by ICAI in India along with the compliance and applicability of accounting standards in India.

CO3: to understand the budgets and also gain knowledge about various type of budgets and budgetary control.

CO4: To learn about the financial status with the help of ratio analysis and also understand the concept of cost –volume profit analysis and decision making in Accounting and reporting

CO5: it also covers contemporary issues in accounting: Price level accounting; Value chain analysis; Activity-based costing; Quality costing; Kaizen Costing Target and life cycle costing.

Business statistics

CO1: the subject will enable students to understand correlation and regression analysis, Probability distribution: Binomial, Poisson and normal distribution.

CO2: Will learn the Hypotheses testing, Sampling tests – Large and small Sample tests – Z-Test, T-Test.

CO3: The course will help students to understand parametric and Non-Parametric tests. Chi Square Test: Independent of Attributes & Test of Goodness of fit.

CO4: course will enable the students to understand concepts of Type I& Type II errors, Level of Significance, Confidence Interval, Acceptance & Critical Regions, One tailed & two tailed test.

Managerial economics

CO1: this will enable the students to understand the meaning and nature of managerial economics and theories of consumer choice.

CO2: the course will acquaint the student with cost theory and estimation, Economic concept of cost. Types of markets and characteristics of different market structures;

CO3: this will also enable the students to understand the nature and phases of a Business cycle, Inflation, Inflation in terms of demand-pull and cost-push factors, Effects of inflation. Monetary and Fiscal Policy.

CO4: this will also enable students to understand the various macroeconomic indicators.

Computer fundamental for business

CO1: to know the basics of computer system, computer software & hardware and information processing system.

CO2: to understand the Number System: Bit, Byte, Binary, Decimal, Hexadecimal, and Octal Systems, Conversion from One System to the other.

CO3: To learn about computer network & communication: network types, network topologies, network communication devices, physical communication media, OSI, network protocol (TCP/ IP), internet and its applications: E-mail, TELNET, FTP, World Wide Web, internet chatting.

CO4: to learn about Word Editing Features, Formatting Features, Saving, Printing, Table Handling, Page Settings, and Spell-Checking.

CO5: to gain knowledge of Spreadsheet: Workbook, Worksheets, Data Types, Operators, Cell Formats, Freeze Panes, Editing Features, Formatting Features, Creating Formulas, using Formulas, Sorting, Filtering, Functions, Charts and Graphs.

CO6: Presentation Graphics Software: Templates, Views, Formatting Slide, Slides with Graphs, Animation, Using Special Features, Presenting Slide Shows.

Entrepreneurship development

CO1: To know the basics of Entrepreneurship, Factors & Problems (Operational and Non-Operational) and Obstacles.

CO2: To understand the Theories of Entrepreneurship, Schumpeter's, Ducker's and Walker's views on Entrepreneur.

CO3: To learn about the converting business opportunities into reality, feasibility Report and analysis, Entrepreneurial Problems.

CO4: To be familiar with External Environment Analysis, Venture Capital, entrepreneurship Development Programmes in India.

Business environment

CO1: systematically explores the external environment: legal & regulatory, macroeconomics, cultural, political and technological.

CO2: to know the Economic Environment, industrial policy, an overview of five year plans and Niti Aayog, fiscal policy, RBI- Role and functions, monetary policy, EXIM policy, public sector and economic development, New economic policy: Economic reforms , and also an introduction to Special Economic Zones (SEZs).

CO3: discuss the supply and demand theory and its impact on insurance.

CO4: explain the effects of government policy on the economic environment.

CO5: discussing the Stock Exchanges, Role and functions of SEBI as regulator of financial markets.

Management process & organizational behaviour

CO1: to discuss and communicate the evaluation of management and Emergence of Management Thought – Classical, Neo-Classical and Modern Theories and how it will affect future managers.

CO2: to identify and explain Planning and Decision Making Process, Creativity in Decision Making Techniques and also identify some skills required for the contemporary management practices.

CO3: to have the in-depth understanding of the process of motivation and theories of motivation.

CO4: to know the various leadership styles to anticipate the consequences of each leadership style.

CO5: to make the students to practice the process of management functions: Planning, organizing, staffing, directing and controlling.

CO6: to discuss Organizational Behaviour and Models of OB, Contributing Disciplines to OB: Emerging Challenges for OB, Foundations of Individual Behaviour, understanding of Attitudes, perception, Personality, and Learning.

Strategic financial management

CO1: will enable the students to understand the financial policy and strategic planning, risk and uncertainty.

CO2: to explain financial strategy for capital structure, strategy for shareholders value maximization.

CO3: the course will acquaint the students with the expansion and restructuring: merger and amalgamations, divestment strategy and evaluation of merger proposal.

CO4: the course will help students to understand the leasing, venture capital, fiscal incentives and capital rationing.

CO5: it will make students to understand the financial strategy, corporate strategy and shareholder value creation.

Marketing management

CO1: to know the concept of Marketing and various problems in marketing

CO2: the course will enable students to understand the basis for market segmentation, branding, trade mark and product life cycle.

CO3: it will make student familiar with Price strategies, distribution channels and also the factors affecting choice of distribution channels.

CO4: to learn the strategies for new product planning and development branding, packaging, labelling and pricing decision strategies.

CO5: to ensure the students to understand the product promotion techniques and various issues and complexities advertising.

Business research methods

CO1: to understand a meaning and concept of research design.

CO2: the students will be able to identify the process of designing a research study from its initiation to the report.

CO3: the course make student familiar with ethical issues in research.

CO4: to explain the sampling techniques, methods and hypothesis testing. t-test, Z-test, chi square test.

CO5: student should know the analysis of variance; factor analysis, cluster analysis, report preparation and presentation, use of computers in research, essential qualities of research report.

Human resource management

CO1: the subject makes students aware of basic aspects of human resource management to understand the functioning of human resource management in an organizational setting.

CO2: it enables students to understand the importance and scope of Human Resource Management in India.

CO3: students will be able to understand the concept of Recruitment and Selection- Sources of Recruitment, Selection Process, Test, Types and methods of Methods of Training.

CO4: to gain an insight about the wages and salary Administration, Wage Boards and Pay Commission, Wage Incentive, Fringe Benefits, Employees Welfare, Safety and Health Measures, Redressal of Grievances.

CO5: to understand the TQM Quality circles and Quality control, Quality of Work Life, Work Life Balance.

CO6: to make student able to develop strategic action plans about HRM, Industrial Relations, Parties to Industrial relations. And also Trade Union, Problems of Trade Unions, Causes for Industrial Disputes, Settlement of Industrial Disputes.

Financial management

CO1: course will enable the students to understand the meaning and nature of financial management and also the concept of cost of capital.

CO2: this will acquaint students with the leverages, capital structure and dividend decisions.

CO3: it will help students to understand the detailed concept of capital budgeting decisions with its various methods and risk analysis pertaining to capital budgeting decisions.

CO4: will enable the students to understand the concept of corporate and financial restructuring.

International business environment

CO1: will enable the students to understand the meaning and nature of international business environment, international trade and protection.

CO2: will acquaint the students with the international factor movements, multinational firms and FDI, Political economy of trade, WTO.

CO3: will help students to understand the international macroeconomics, National income accounting and balance of payments.

CO4: it will enable the students to understand the concept of international monetary system and international capital markets.

CO5: student will acquire the knowledge of International Economic Environment, Institutional support to International business- UNO, IMF, World Bank, UNCTAD, International financial environment, International Monetary System, Management of risk in foreign exchange markets; Foreign Direct Investment.

CO6: Will acquaint the students with the International Economic Cooperation and Agreements, SAARC, SAPTA, Indo-Lanka Free Trade Agreements, NAFTA.

CO7: Will help students to gain understanding pertaining to IMF, WB, ADB, UNCTAD, IMODO and WTO.

Security analysis and portfolio management

CO1: students will gain a comprehensive understanding of the concept of security portfolio management

CO2: course caters the needs of the industry by providing the skilled students who are able to take managerial decisions by implementing qualitative techniques and operational research.

CO3: students will gain skills of building portfolio with the help of Markowitz's model, Sharpe's Index Model and capital assets pricing model.

CO3: students will understand the techniques of portfolio performance evaluation.

CO4: student will acquire the knowledge of Capital Market Theory: CAPM theory, Assumptions, CAPM Model. Portfolio Revision and Evaluation, strategies of portfolio revision, constrain in portfolio revision.

CO5: student will understand the Fundamental Analysis & Technical Analysis Economic Analysis Industry.

Project management

CO1: The course will emphasize on imparting the knowledge, skills, tools and techniques involved in carrying out project.

CO2: manage the scope, cost, timing and quality of the project.

CO3: make students aware about Concepts of Project Management, Meaning and definition of Project, characteristics of a project, Project Life Cycle Phases, Role of a Project Manager, The Planning Process: Work Breakdown Structure, Cost Planning – tools & techniques, cost estimation, Time Planning – tools & techniques.

CO4: will enable student to understand the Project Appraisal: Technical Feasibility, Economic Feasibility, Financial Evaluation, Appraisal Under Risk and Uncertainty, Sensitivity Analysis, Social Cost Benefit Analysis: Rationale, Fundamentals of Shadow Pricing, Basic approaches to Social Cost Benefit Analysis to achieve project success.

CO5: course will emphasize on efficient utilisation of technology; Graphic Presentation of Project Scheduling: Graphic representation of project activities, Network Analysis, Network Techniques: PERT and CPM. Resource Allocation, Overview of MS-Project 2000.

CO6: will enable the student to understand the Project Control: Project direction, co-ordination & control, project cost evaluations & cost control, Interface with industrial sickness, project monitoring & MIS.

Financial services

CO1: this course gives students an insight about Indian Financial System and its history, operating procedure and its relevance in Import & Export.

CO2: course will enable students to make an insight in Mutual funds and AMCs: Concept, origin and growth of mutual funds, Constitution & management of MFs - Sponsors, Trustees, AMCs, and custodians, credit rating agencies in India and International credit rating agencies.

CO3: will enable concept and development of leasing, business, difference between leasing & hire purchase, types of leasing business, advantages to lessor and lessee, Tax aspect of leasing.

CO4: course will emphasize on concepts and characteristics of venture capital, venture capital in India, guidelines for venture capital.

CO5: make students aware about Origin and development of merchant banking in India scope, organizational aspects and importance of merchant bankers, guidelines of SEBI w.r.t. Merchant bankers.

CO6: make students to understand the debt Securitization, development of factoring types & importance, procedural aspects in factoring, financial aspects, prospects of factoring in India and Plastic Money: Concept and different forms of plastic money - credit and debit cards, pros and cons.

International financial management

CO1: to provide an introduction to international finance theory exchange rate determinants, foreign exchange exposure, foreign exchange markets, interest rate parity.

CO2: to provide an insight to Theories of International business, international business methods, recent changes and challenges in IFM.

CO3: to enable the students to understand International Financial Management Globalization of International Financial Management.

CO4: to develop International Capital Budgeting: Net Present Value and its drawbacks, Adjusted Net Present Value, analysis of international capital budgeting, Direct Investments, Foreign exchange risk and its impact on capital budgeting.

CO5: will enhance the knowledge of Bond Financing, Loan Financing, Securitized Financing (GDR and ADR).

CO6: to teach students international CAPM and cost of capital of a Foreign Investment, the capital structure of MNCs, cost of capital in segmented versus integrated markets.

CO7: to make student to understand Export - Import bank of India, Financing in the short-term and in the long -term, managing net working capital.

Service marketing

CO1: to understand the importance of services and the seven Ps of services.

CO2: demonstrate knowledge about service design, service quality, and the gaps model of service quality.

CO3: Better understanding of the demand and capacity management, yield management.

CO4: understand the concept of Employees' Role in Service Delivery; Customers' Roles in Service; Delivering Services through International and Electronic Channels, Managing Demand and Capacity, Integrated Services Marketing Communications; Pricing of services.

Financial derivatives

CO1: To make students to understand genesis of derivatives trading by tracing its historical development, types of traded derivatives products, regulation and policy developments, trend and growth, future prospects and challenges of derivative market in India

CO2: will enable students to know the Swaps, Structure of Swaps, Interest Rate Swaps, Currency Swaps, Commodity Swaps, Swap Variant Swap Dealer Role, Equity Swaps, Economic Functions of Swap Transactions - FRAs and Swaps.

CO3: demonstrate critical thinking along with analytical and problem solving skills in the context of derivatives pricing and hedging practice.

CO4: exhibit an understanding of pricing forwards, futures and options contracts.

CO4: Explain Option Markets in India on NSE and BSE. Option Pricing – Intrinsic Value and Time Value- Pricing at Expiration – Factors Affecting Options pricing- Put-Call Parity Pricing Relationship- Pricing Models

International marketing management

CO1: the course provides the knowledge about International Marketing Environment to the students.

CO2: To know the concept of International Marketing, problems in international marketing and ways to be international.

CO3: To understand the external marketing environment and different International market entry strategies.

CO4: To be familiar with different techniques of foreign market selection, their segmentation, positioning.

CO5: How to make successful International Marketing Plan, Organising and controlling, evaluating the Impact of globalisation.

CO6: To learn the New Product planning & development, branding, Packaging and Labelling, Pricing Decisions and Strategies.

Consumers behaviour

CO1: students will gain a comprehensive understanding regarding consumer behaviour, techniques, process and develop the understanding of the consumer behavior.

CO2: student will understand about the Consumer Behavior& Marketing, Stages in Marketing, Application of Consumer Behavior Science, Changing Role of Product, Marketer and Consumer.

CO3: student will understand about the Learning Theories: Stimulus Response Theory, Generalization, Cognitive Learning Theory, and Branding. Attitude Formation of Attitude,

Attitude Motivate, Role of Influences- Influences of Family, Influence of Groups & Peers, Influence of Media.

CO4: student will learn about the Concept of Motivation – Motivation Process, Positive & Negative Motivation – Integrity of Motivation – Hierarchy of Needs – Emerging Concept of Involvement, and External Determinants of Buying Behavior: Family, reference group and social class; Influence of culture; Sub-cultural aspects of consumer behavior, Models of buyer behavior.

CO5: will enable the students to learn about Consumer Protection: Role of Government, Consumer Protection Legislation in India, Role of Media – Ethics in Business and its relevance to the study of Consumer Behavior.

Corporate performance measurement

CO1: this course introduces students to the types of managerial information used to effectively and efficiently run the business.

CO2: student will know about the performance goals and incentives and the use of diagnostic tools and control and performance measurement using Economic Value Added (EVA); Comparison between Return on Investment (ROI) and EVA methodology of measuring performance

CO3: student will aware about how to measure the Corporate Performance through Balanced Scorecard and its value creation potential;. Rationality behind balance score card; performance dimensions of the balance score card; Throughput Accounting.

CO4: student will learn about Information Systems aspects of management control; Control-needs of Information flow.

CO5: student will gain the knowledge of Management Control System and its applications; Responsibility Accounting-Meaning and Methodology, types of responsibility centres.

CO6: student will become familiar with organizational structure of responsibility centres; objectives and methods of transfer pricing, pricing corporate services and administration of transfer pricing.

School of Pharmacy

B. Pharm

Pharmaceutics

CO1: To understand the basics of different dosage forms, pharmaceutical incompatibilities and pharmaceutical calculations.

CO2: To understand various physicochemical properties of drug molecules in the designing of the dosage forms along with principles of chemical kinetics and stability testing of formulations.

CO3: To understand the basic concepts and applications of biopharmaceutics and pharmacokinetics and bioequivalence along with their significance.

Pharmaceutical Chemistry

CO1: To understand the classification and nomenclature of organic compounds, structural isomerism, important physico-chemical properties, reactions and synthesis of these compounds.

CO2: To know the sources of impurities and methods to determine the impurities in inorganic drugs and pharmaceuticals and understand the medicinal and pharmaceutical importance of inorganic compounds.

CO3: To understand the principles of volumetric and electro chemical analysis, various volumetric and electrochemical titrations. Students develop analytical skills for the Qualitative and Quantitative analysis.

CO4: To understand the chemistry of drugs with respect to their pharmacological activity, drug metabolic pathways, Structural Activity Relationship (SAR) of different class of drugs and synthesis of active pharmaceutical ingredients (APIs).

CO5: To understand the chromatographic separation, analysis of drugs and development of analytical methods.

Pharmacology

CO1: To understand the gross morphology, structure and functions of various organs of the Human body.

CO2: To understand the molecular levels of the chemical process associated with living cells along with the principles of metabolism of nutrient molecules in physiological and pathological conditions.

CO3: To understand the pharmacological actions of different categories of drugs and the mechanism of drug action at organ system/sub cellular/ macromolecular levels for the prevention and treatment of various diseases.

Pharmacognosy

CO1: To understand the taxonomic identification of medicinal plants.

CO2: To study the morphology and microscopy of crude drugs.

CO3: To understand raw material as source of herbal drugs from cultivation to herbal drug product along with the WHO and ICH guidelines for evaluation of herbal drugs.

Pharmaceutical Management and Regulatory Science:

CO1: To understand the marketing concepts, techniques and their applications in the pharmaceutical industry along with the know-how of marketing management in Sales and Product management.

CO2: To know about the process of drug discovery and development, various regulatory Authorities and agencies governing the manufacture and sale of pharmaceuticals, regulatory approval process and their registration in Indian and international markets.

Pharmacy Practice

CO1: To know various drug distribution methods in a hospital, pharmacy stores management and inventory control.

CO2: To monitor drug therapy of patient through medication chart review and clinical review, obtain medication history interview and counsel the patients, identifying drug related problems, detection and assessment of adverse drug reactions.

Computer Applications in Pharmacy

CO1: To understand the Database Management system, computer applications in clinical studies.

Communicative Skills in Pharmacy

CO1: To understand the behavioral needs for a Pharmacist to function effectively in different profiles of pharmacy profession.

CO2: To learn and practice verbal and non-verbal communication along with managerial skills.

D. Pharm

Pharmaceutics

CO1: To understand the basics of different dosage forms, handling of prescription and aseptic techniques.

Hospital and Clinical Pharmacy

CO1: To know various drug distribution methods in a hospital and study of the pharmacy stores management and inventory control.

CO2: To do patient counseling in community pharmacy.

Pharmaceutical Chemistry

CO1: To understand the classification and nomenclature of organic compounds, structural isomerism and important physico-chemical properties.

CO2: To know the sources of impurities and methods to determine the impurities in inorganic drugs and pharmaceuticals and understand the medicinal and pharmaceutical importance of inorganic compounds.

CO4: To understand the chemistry of drugs with respect to their pharmacological activity and synthesis of active pharmaceutical ingredients (APIs).

Pharmacology

CO1: To understand the gross morphology, structure and functions of various organs of the human body.

CO3: To understand the pharmacological actions of different categories of drugs along with their mechanism of action, therapeutic/ prophylactic uses and adverse effects.

Pharmacognosy

CO1: To study the morphology and microscopy of crude drugs.

CO3: To study of Herbal drugs and formulations.

Drug Store and Business Management

CO1: To study the drug distribution, stock maintenance, pharmacy store management and inventory control in a hospital.

CO2: To study the prescription errors and understand the concept of rational drug therapy.

Communicative Skills in Pharmacy:

CO1: To understand the behavioral needs for a Pharmacist to function effectively in different profiles of pharmacy profession.

CO2: To learn and practice verbal and non-verbal communication along with managerial skills.

MAIT

B.Tech- Computer Science & Engineering:

Algorithms

CO1: Analyze the pros and cons of applying the different design paradigms in different Contexts.

CO2: Exposure to randomization as a tool for developing algorithms.

CO3: Relevance of analysis to the design of efficient computer algorithms.

CO4: Identify the computational issues and apply suitable algorithms to solve it effectively

CO5: Conceptualize and design efficient and effective algorithmic solutions for different real-world problems.

Computer Networks

CO1: Illustrate the concepts of Network Security and Compare Various Symmetric and Asymmetric Cryptographic methods used for Network Security.

CO2: Classify various Algorithms to be used at various TCP/IP Layers & to operate Digital Signature in Real World Situation

CO3: Summarize different Authentication Techniques & Describe programs like PGP & S/MIME

CO4: Implement IP Security Architecture & Transport Layer Security to identify the vulnerability of the Internet systems and recognize the mechanisms of the attacks, and apply them to design and evaluate counter-measure tools

CO5: Implement Firewall design principles and identify various intrusion detection systems and be able to achieve highest system security

Software Engineering

CO1: Formulate problem by following Software Testing Life Cycle.

CO2: Design Manual Test cases for Software Project.

CO3: Identify the realistic problem for different category of software.

CO4: Use automation testing tool students will be able test the software.

CO5: Follow the process related activity and testing techniques to work as team member.

Operating System

CO1: Classify Linux Kernel mode with user mode & contrast between Kernel structures.

CO2: Identify and estimate process management & thread management strategies along with their different operations (Process creation)

CO3: Implement different system calls for various file handling operations.

CO4: Determine paging and Caching techniques related to Virtual Memory.

CO5: Construct shell scripts.

CO6: Debate various case studies.

Artificial Intelligence

CO1: Exhibit strong familiarity with a number of important AI techniques, including in particular search, knowledge representation, planning and constraint management.

CO2: Interpret the modern view of AI as the study of agents that receive percepts from the environment and perform actions.

CO3: Build awareness of AI facing major challenges and the complexity of typical problems within the field.

CO4: Assess critically the techniques presented and apply them to real world problems.

CO5: Develop self-learning and research skills to tackle a topic of interest on his/her own or as part of a team.

Cloud Computing

CO1: Identify the appropriate cloud services for a given application.

CO2: Assess the comparative advantages and disadvantages of Virtualization technology.

CO3: Analyze authentication, confidentiality and privacy issues in cloud computing.

CO4: Identify security implications in cloud computing.

CO5: Understand the importance of protocols and standards in management for cloud services

Computer Graphics

CO1: Describe different image representation, their mathematical representation and different their data structures used. K2

CO2: Classify different segmentation algorithm for given input K2

CO3: Create a 3D object from given set of images K3

CO4: Detect a moving object in video using the concept of motion analysis K3

CO5: Recognize the object using the concept of computer vision K4

Algorithm Analysis and Design

CO1: Identify Data Structures, Design paradigms and Computational complexity in the design of simple tools

CO2: Demonstrate relationships among NP-Complete Problems

CO3: Implement the approximate algorithms approach to solve some NP-Complete Problems.

CO4: Demonstrate randomness by solving some examples

CO5: Implement algorithms for geometry and large data-sets.

Cryptography and Network Security

CO1: Identify Vulnerabilities in a Network

CO2: Solve Problems using various Algorithms

CO3: Identify Various Attacks and Formulate Defense Mechanism

CO4: Understand Wireless Security

CO5: Understand Web And DNS Security.

Distributed Database:

CO1: Aware of fundamentals of Distributed Database systems.

CO2: Use the different techniques of Distributed query processing.

CO3: Set the rules over management of transaction and concurrency control.

CO4: Familiar with parallel database system architecture.

CO5: Apprehend Machine Learning Algorithms.

Mobile Computing

CO1: Understand and identify the GSM, GPRS and Bluetooth software model for mobile computing.

CO2: The ability to develop applications that are mobile-device specific and demonstrate current practice in mobile computing contexts.

CO3: Understanding of the characteristics and limitations of mobile hardware devices including their user-interface modalities

CO4: Analyze QoS over wire and wireless channels

CO5: Able to promote the awareness of the life-long learning, business ethics, professional ethics and current marketing scenarios.

Compiler Design

CO1: Identify all essential steps for automatically converting source code into object code. (Understand)

CO2: Generate the low-level code for calling functions/methods in modern languages. (Apply)

CO3: Discuss opportunities for optimization introduced by naïve translation and approaches for achieving optimization such as instruction selection, instruction scheduling, register allocation, and peephole optimization. (Apply)

CO4: Interpret benefits and limitations of automatic memory management. (Understand)

CO5: Explain advantages, disadvantages and difficulties of just in time and dynamic recompilation.

Dataware House and Datamining

CO1: Understand the concepts of Big data and challenges in processing Big Data

CO2: Understand Hadoop architecture and eco-system.

CO3: Gain conceptual understanding of Hadoop Distributed File System.

CO4: Understand the concepts of map and reduce and functional programming

CO5: Identify appropriate techniques and tools to solve actual Big Data problems.

Multimedia Technologies

CO1: Identify different media; representations of different multimedia data and data formats.

CO2: Analyze various compression techniques.

CO3: Compare various audio and video file formats.

CO4: Apply different coding technique for solving real world problems.

CO5: Choose optical storage media suitable for multimedia applications.

Data Structures

CO1: Apply measures of efficiency to algorithms and Compare various linear data structures like Stack ADT, Queue ADT, Linked lists.

CO2: Analyze and compare linear data structures and analyze different searching and hashing techniques.

CO3: Analyze and compare various non – linear data structures like Trees and Graphs.

CO4: Analyze and compare various sorting algorithms, to select from a range of possible options, to provide justification for that selection, and to implement the algorithm in a particular context.

CO5: Understand and execute lab experiments and develop a small project along with his/her team members.

Computer Organization & Architecture

CO1: Student will be able to understand the Overview of von Neumann architecture and Pipelining

CO2: Student will be able to demonstrate Hierarchical Memory Technology

CO3: Student will be able to explain the Instruction level parallelism

CO4: Student will be able to analyze the Multiprocessor Architecture

CO5: Student will be able to analyze the Multiprocessor Architecture

Soft Computing

CO1: Explain soft computing differentiating hard and soft computing and enumerate briefly overview of fuzzy systems , neural networks and genetic algorithms.

CO2: Demonstrate a fuzzy controller using fuzzy logic systems

CO3: Interpret pattern recognition using artificial neural network

CO4: Interpret Genetic algorithms and operations.

Machine Learning

CO1: Understand and apply the differences among the styles of learning: supervised, reinforcement, unsupervised and parametric methods

CO2: Comprehend probabilistic methods for learning and for classification

CO3: Analyze the non parametric methods and decision trees to take the proper decision making.

CO4: Understand rule based knowledge and Kernel machines to reduce the cost of various statistical methods , Bayesian Estimation, HMM models

Project-I

CO1: Identify and Finalize problem statement by surveying variety of domains.

CO2: Perform requirement analysis and identify design methodologies

CO3: Apply advanced programming techniques

CO4: Present technical report by applying different visualization tools and Evaluation metrics.

Project-II

CO1: Review the literature and develop solutions for framed problem statement.

CO2: Implement hardware and/or software techniques for identified problems.

CO3: Test and analyze the modules of planned project.

CO4: Write technical report and deliver presentation.

CO5: Apply engineering and management principles to achieve project goal

B.Tech- Electronics & Communication Engineering

Basic Electronics Engineering

CO1 Characterize semiconductors, diodes, transistors and operational amplifiers

CO2 Design simple analog circuits

CO3 Design simple combinational and sequential logic circuits

CO4 Identify functions of digital multimeter, cathode ray oscilloscope and transducers in the measurement of physical variables

CO5 Understand fundamental principles of radio

Analog Electronics

CO1 Study and analyze the behavior of semiconductor devices.

CO2 Characterize the current flow of a bipolar transistor in CB,CE and CC configurations

CO3 Bias the transistors and FETs for amplifier applications.

CO4 Realize simple amplifier circuits using BJT and FET.

CO5 Design half wave and full wave rectifiers with filters

Digital Circuit Design

CO1 Design and analyze combinational and sequential logic circuits through HDL models

CO2 Optimize combinational and sequential logic circuits

CO3 Understand fault detection techniques for digital logic circuits

CO4 Analyze a memory cell and apply for organizing larger memories

Signals and Systems

CO1 Classify the signals as Continuous time and Discrete time

CO2 Analyze the spectral characteristics of signals using Fourier analysis.

CO3 Classify systems based on their properties and determine the response of LTI system using convolution.

CO4 Identify system properties based on impulse response and Fourier analysis.

CO5 Apply transforms techniques to analyze continuous-time and discrete-time signals and systems.

Electro Magnetic Field and Theory

CO1 Solve Maxwell's equations using vector calculus in three standard coordinate systems

CO2 Deduce EM wave propagation in free space and in dielectric medium

CO3 Analyze electromagnetic wave propagation in guiding structures under various matching conditions
CO4 Understand the power flow mechanism in guiding structures and in unbounded medium

Communication System-I

CO1 Compare the performance of AM, FM and PM schemes with reference to SNR

CO2 Understand noise as a random process and its effect on communication receivers

CO3 Evaluate the performance of PCM, DPCM and DM in a digital communication system

CO4 Identify source coding and channel coding schemes for a given communication link

Antennas and Propagation

CO1 Understand the concept of radiation through mathematical formulation

CO2 Plot the characteristics of wire and aperture antennas

CO3 Develop the performance characteristics of array antennas

CO4 Measure the antenna parameters

CO5 Understand the behavior of nature on em wave propagation

Linear Integrated circuits And Applications

CO1 Design op-amp circuits to perform arithmetic operations.

CO2 Analyze and design linear and non-linear applications using op-amps.

CO3 Analyze and design oscillators and filters using functional ICs.

CO4 Choose appropriate A/D and D/A converters for signal processing applications.

Communication System-II

CO1 Model a digital communication system.

CO2 Compute probability of error and inter symbol interference from eye diagram in data transmission.

CO3 Obtain the power spectra of digital modulated signals.

CO4 Design encoder and decoder schemes for error control.

Digital Signal Processing

CO1 Find DFT of a given signal through Fast Fourier Transform Techniques

CO2 Design FIR and IIR type digital filters.

CO3 Identify filter structures and evaluate the coefficient quantization effects

CO4 Understand sample rate conversion techniques.

CO5 Compare the architectures of DSP and General Purpose Processors.

Micro Controllers

CO1 Understand the evolution of processor architectures

CO2 Write simple programs in assembly language of Pentium processor

CO3 Interface peripheral devices and memory with microcontrollers

CO4 Program an ARM processor for DSP Applications

Computer Networks

CO1 Identify the issues and challenges in the architecture of a computer network.

CO2 Understand the ISO/OSI seven layers in a network.

CO3 Realize protocols at different layers of a network hierarchy.

CO4 Recognize security issues in a network.

Satellite Communication:

CO1 Understand the orbital and functional principles of satellite communication systems

CO2 Architect, interpret, and select appropriate technologies for implementation of specified satellite communication systems

CO3 Analyse and evaluate a satellite link and suggest enhancements to improve the link performance.

CO4 Select an appropriate modulation, multiplexing, coding and multiple access schemes for a given satellite communication link.

CO5 Specify, design, prototype and test analog and digital satellite communication systems as per given specifications.

Embedded Systems

CO1 Identify the hardware and software components of an embedded system

CO2 Choose appropriate embedded system architecture for the given application

CO3 Write programs for optimized performance of an embedded system and validate

Optical Fiber Communication

CO1 Identify and characterize different components of an Optical Fiber Communication link.

CO2 Analyze optical source, Fiber and Detector operational parameters

CO3 Compute optical fiber link design parameters

CO4 Understand WDM, Optical Amplifiers, Optical Switching and networking technology concepts.

Cellular and Mobile Communications

CO1 Understand the evolution of cellular communication systems upto and beyond 3G

CO2 Design a cellular link and estimate the power budget.

CO3 Choose proper multiple accessing methods depending on channel model

CO4 Identify traffic channels for call processing

CO5 Calculate key performance metrics of a cellular communication system.

Linear control systems

CO1 Analyze electromechanical systems using mathematical modeling

CO2 Determine Transient and Steady State behavior of systems using standard test signals

CO3 Analyze linear and non-linear systems for steady state errors, absolute stability and relative stability

CO4 Design a stable control system satisfying requirements of stability and reduced steady state error

Communication systems

CO1 Understand different modulation and demodulation schemes for analog communications.

CO2 Design analog communication systems to meet desired application requirements

CO3 Evaluate fundamental communication system parameters, such as bandwidth, power, signal to quantization noise ratio etc.

CO4 Elucidate design tradeoffs and performance of communications systems.

Microprocessor systems

CO1 Develop basic understanding of microprocessor architecture.

CO2 Design Microprocessor and Microcontroller based systems.

CO3 Understand C, C++ and assembly language programming

CO4 Understand concept of interfacing of peripheral devices and their applications

Electronic measurements and instrumentaion

CO1 Apply knowledge of instruments for effective use

CO2 Select suitable instruments for typical measurements.

CO3 Identify various transducers to measure strain, temperature and displacement.

CO4 Understand data acquisition system and general purpose interfacing bus.

B.Tech- Mechanical Engineering

Manufacturing Process

- CO1. Understand and analyze foundry practices like pattern making, mold making, Core making and Inspection of defects.
- CO2. Understand and analyze Hot and Cold Working, Rolling, Forging, Extrusion and Drawing Processes.
- CO3. Understand different plastic molding processes, Extrusion of Plastic and Thermoforming
- CO4. Understand different Welding and joining processes and its defects
- CO5. Understand, Design and Analyze different sheet metal working processes
- CO6. Understand the constructional details and Working of Centre Lathe

Engineering Thermodynamics

- CO1. Will able to Apply various laws of thermodynamics to various processes and real systems.
- CO2. Apply the concept of Entropy, Calculate heat, work and other important thermodynamic properties for various ideal gas processes.
- CO3. Estimate performance of various Thermodynamic gas power cycles and gas refrigeration cycle and availability in each case.
- CO4. Estimate the condition of steam and performance of vapour power cycle and vapour compression cycle.
- CO5. Estimate Stoichiometric air required for combustion, performance of steam generators and natural draught requirements in boiler plants.
- CO6. Use Psychrometric charts and estimate various essential properties related to Psychrometry and processes

Material Science

- CO1. Understand the basic concepts and properties of Material.
- CO2. Understand about material fundamental and processing.
- CO3. Select proper metal, alloys, nonmetal and powder metallurgical component for specific requirement
- CO4. Detect the defects in crystal and its effect on crystal properties.
- CO5. Evaluate the different properties of material by studying different test

CO6. Recognize how metals can be strengthened by cold-working and hot working

Strength of Materials

CO1. Apply knowledge of mathematics, science for engineering applications

CO2. Design and conduct experiments, as well as to analyze and interpret data

CO3. Design a component to meet desired needs within realistic constraints of health and safety

CO4. Identify, formulate, and solve engineering problems

CO5. Practice professional and ethical responsibility

CO6. Use the techniques, skills, and modern engineering tools necessary for engineering practice

Fluid Mechanics

CO1. Use of various properties in solving the problems in fluids

CO2. Use of Bernoulli's equation for solutions in fluids

CO3. Determination of forces drag and lift on immersed bodies

Kinematics of Machines

CO1. Identify mechanisms in real life applications.

CO2. Perform kinematic analysis of simple mechanisms.

CO3. Perform static and dynamic force analysis of slider crank mechanism.

CO4. Determine moment of inertia of rigid bodies experimentally.

CO5. Analyze velocity and acceleration of mechanisms by vector and graphical methods.

Operation Research

CO1. Identify and develop operational research models from the verbal description of the real System or production system.

CO2. Understand the mathematical tools that are needed to solve optimization of engineering and production problem

CO3. Develop a report that describes the model and the solving technique, analyze the results and propose recommendations in language understandable to the decision making processes in Management Engineering

Machine Drawing

- CO1. Orthographic projections and sectioned views of the machine components.
- CO2. Assembly drawings of rigid and flexible couplings, joints and their sectional views.
- CO3. Threaded fasteners, riveted joints and drawings of engine sub assemblies.

Internal Combustion Engines

- CO1. Engines classification and applications (propulsion, power production, cogeneration)
- CO2. Performance criteria, sizing and influence of atmospheric conditions. Gas exchange processes, supercharging and turbocharging. Formation, characteristics, vaporization and combustion of sprays.
- CO3. Combustion in Spark-Ignition and Compression-Ignition engines. Classical and alternative fuels
- CO4. P- θ and P-V diagrams -Heat release rate. Pollutant formation and control: NO_x, CO, HC etc. particulates. Engine heat transfer and cooling systems

Heat and Mass Transfer

- CO1. Understand the basic laws of heat transfer.
- CO2. Account for the consequence of heat transfer in thermal analyses of engineering systems.
- CO3. Analyze problems involving steady state heat conduction in simple geometries.
- CO4. Develop solutions for transient heat conduction in simple geometries.
- CO5. Understand the fundamentals of convective heat transfer process. I.e. Natural, forced and mixed convection in various type of flow. i.e. internal and external flow.
- CO6. Analyze heat exchanger performance by using the method of log mean temperature difference. and heat exchanger performance by using the method of heat exchanger effectiveness.
- CO7. Calculate radiation heat transfer between surfaces.
- CO8. To solve complex problems where heat and mass transfer processes are combined with chemical reactions, as in combustion

Machine Design

- CO1. Understand the fundamental scientific principles of mechanical design (stress, strain, material properties, failure theories, fatigue phenomena, fracture mechanics) and their importance and use in design analysis

CO2. Develop practical experience with the function, design and analysis of actual machine components including prediction of their life and failure

CO3. Practice systematic approaches to mechanical design and analysis procedures

Project

CO1: Review the literature and develop solutions for framed problem statement.

CO2: Implement hardware and/or software techniques for identified problems.

CO3: Test and analyze the modules of planned project.

CO4: Write technical report and deliver presentation.

CO5: Apply engineering and management principles to achieve project goal

B.Tech- Electrical & Electronics Engineering

Basics of Electrical Engineering

CO1: Students will gain knowledge regarding the various laws and principles associated with electrical systems.

CO2 : Students will gain knowledge regarding electrical machines and apply them for practical problems.

CO3 : Students will gain knowledge regarding various types' semiconductors.

CO4 : Student will gain knowledge digital electronics.

CO5 : Student will gain knowledge on electronic systems.

CO6 : Students will acquire knowledge in using the concepts in the field of electrical engg. Projects and research.

Circuit Theory

CO1: To analyze behavior of basic circuit elements and to apply concept of mesh and node analysis in circuit theory.

CO2: Apply various network theorems to determine the circuit response / behavior.

CO3: To apply transformation of a network to analyze time domain , differential eq.

CO4: To study necessary conditions for driving point functions , transfer function for their application to a given network for analyzing circuit design.

CO5: To analyze the sinusoidal steady state for different electric network and apply concepts of Fourier series for analyzing non sinusoidal periodic waveforms.

Electrical Power Generation

CO1: To impart knowledge on arrangement, construction and working of thermal and hydro power plant.

CO2: To impart knowledge on arrangement, construction and working of nuclear and diesel power plant.

CO3: Students will be able to estimation of solar radiation and their constants for power generation in different technologies.

CO4: Students will be able to understand the principles of electrical generation with wind energy and terminology.

CO5: Students will be able to learn to different technique of conversion of biomass. biofuels, geothermal energy and MHD power generation.

Electrical Measurement and Measuring Instruments

CO1: Get ability use, measure and analysis the instruments.

CO2: Calculate all the parameters related to measurements.

CO3: Understand about different instruments that are used for measurement purpose.

CO4: Identify the appropriate instruments for measurement of different quantities.

CO5: Understand various transducer and sensor.

CO6: Understand measurement of various parameters of frequency.

Electrical Machine -I

CO1: Understand electrical principle, laws, and working of DC machines.

CO2: Analyze the construction and characteristics and application of various type of DC generators.

CO3: Analyze the construction and characteristics and application of various type of DC motors and testing of motors according to Indian standard.

CO4: Understand electrical principle , laws, and working of 1 phase transformer and losses . and also conduct various test on the transformer.

CO5: Understand electrical principle , laws, and working of 3 phase transformer and losses . and also conduct various test on the transformer.

CO6: Analyze the transformer and convert 3 phase transformer to multi phase transformer.

Electromagnetic Field Theory

CO1: Apply vector calculus in orthogonal coordinate system.

CO2: Analyze behavior of static electric fields in standard configurations.

CO3: Analyze behavior of dynamic electric fields in standard configurations.

CO4: Analyze behavior of static magnetic fields in standard configurations .

CO5: Analyze behavior of dynamic magnetic fields in standard configurations.

CO5: Describe and analyze electromagnetic wave propagation in free space.

Control System

CO1: Students will be able to learn the basics of various types of control systems and automatic systems.

CO2: Students will be able to build the mathematical model of system from differential equation and vice versa and shall know the better effects of feedback due to parameter variations.

CO3: Students will be able to apply the basic knowledge to formulate the input output relationship of various component used in control system and their applications in building control system.

CO4: Students will be able to perform and study a time domain analysis of control system and different performance measures and finally know about behavior of the system.

CO5: Students will be able to learn the concept of stability , poles and zeros , using routh Hurwitz criteria and relative stability by bode plot, polar plot, Nyquist plot and be able to design and analyze the given system in frequency domain.

CO6: Students will be able to build state space model of system in different forms.

Analog and Digital Electronics

CO1: Understand the basics of opamp and its characteristics.

CO2: Apply the basic knowledge of opamp in developing various linear , non linear application of opamp.

CO3: Learn about the other linear IC's like 723,78**,79**,555 timer, 565 PLL and their applications.

CO4: Understand the digital characteristics of various logic circuits like NMOS, CMOS, TTL, ECL.

CO5: Design various combinational circuits and hence can develop more complicated once.

CO6: Analyze sequential circuit and can apply the knowledge of flip flops in designing more complicated circuits.

Microprocessor and Microcontroller

CO1: Learn internal organization of some popular microprocessor / microcontroller.

CO2: Impart the knowledge about the instruction set.

CO3: Understand the basic idea about data transfer schemes and its applications.

CO4: Learn hardware and software interaction and integration.

CO5: Learn the design of microprocessor / microcontroller base system.

Electrical Drives

CO1: Students will be able to understand definition, scope, objectives, and limitation of electric drives, power transistor and SCR.

CO2: Student will be analyze the construction and characteristics and application of D.C. motor .

CO3: Students will be able to analyze the construction and characteristics and application of three phase induction motor .

CO4: Students will be able to analyze the speed control methods of A.C. and D.C. motor .

CO5: Students will be able to analyze the construction and characteristics and application of sensor, transducer and switches. Students will be able to analyze the industrial applications of electric drives.

Electrical Machine II

CO1: To impart the knowledge on fundamental of AC rotating machine

CO2: To impart the knowledge on constructional details, principle of operation of 3 phase alternator and synchronous motor

CO3: To impart the knowledge on constructional details, principle of operation, performance, starter, speed control and braking of 3 phase induction motor.

CO4: To impart the knowledge on constructional details, principle of operation, type of 1 phase induction motor and special machine.

Transmission and Distribution of Electrical Power

CO1: Students will be able to learn the basics of various fundamentals of electrical power generation , transmission & distribution.

CO2: Students will be able to learn transmission line parameters, their calculations also the effects on transmission lines & its effects on the communication system.

CO3: Students will be able to learn electrical characteristics of transmission line such as types of transmission lines, various effects on transmission & per unit representation of power system.

CO4: Students will be able to learn load flow studies and its equation, Comparison of various methods like GS & NR.

CO5: Students will be able to learn Mechanical design along with the types of insulators also the knowledge of voltage distribution across the string and introduction to HV, LV and EHV.

CO6: Students will be able to learn information regarding conductors and insulation, different types of underground cable parameters.

Power Electronics

CO1: To illustrate the construction, characteristics of thyristor family and understand the basic principle of operation of SCR.

CO2: To illustrate the operation of various triggering circuits for series and parallel operation of SCR's and various protection circuits of thyristors.

CO3: To analysis and design AC/DC rectifier circuit.

CO4: To analysis and design DC/AC inverter circuit.

CO5: To analysis and design DC/DC converter circuit. 6. To examine different applications of power converters.

Computer Application in Power System

CO1: Students will be able to learn the applications of transformer and induction motor and application regarding representation using piece wise linearization and least square error method.

CO2: Students will be able to formulate the mathematical modelling of transformer design, output equation, design dimension of core and yoke.

CO3: Students will be able to learn the fundamentals of electrical circuits and thermal circuits of cooling method.

CO4: Students will be able to learn the basics of induction motor stator design, electrical and magnetic loading, types and design of winding.

CO5: Students will be able to learn the concept of air-gap length design, mmf calculations, magnetizing components, etc.

CO6: Students will be able to learn the mathematical modelling of core loss from design data, winding resistance and leakage reactance from designed data also parameters effect on performance.

Power System Operation and Control

CO1: Students will be able to make students express Economic operation of power system and importance of LFC control.

CO2: Students will be able to allow students discuss about thermal and power plants operation in meeting the load demand optimally. (State and central wide installation).Also expressing importance of reactive power control through seminars.

CO3: Students will be able to improve student's ability in solving problems (numerical problems at present) by posing different problem models related to Economic Load Dispatch, Load Frequency Control and reactive power control.

CO4: Students will be able to apply their knowledge in PSOC for competitive exams like GATE, IES, and Public sector etc.

CO5: Students will be able to discuss single area load frequency control and two area load frequency control.

CO6: Students will be able to model and design turbine and Automatic controller.

CO7: Students will be able to express variation of frequency in the power system with varying load.

Switch Gear and Protection

CO1: Theory & application of main components used in power system protection

CO2: Protection systems used for electric machines, transformers, bus bars, transmission lines.

CO3: Theory, construction, and applications of main types of circuit breakers.

CO4: Design the protection systems needed for each main part of a power system

CO5: Theory and construction of static relay with application

Digital Signal Processing

CO1: Represent discrete-time signals analytically and visualize them in the time domain.

CO2: Understand the meaning and implications of the properties of systems and signals.

CO3: Understand the Transform domain and its significance and problems related to computational complexity.

CO4: Specify and design any digital filters using MATLAB

Power System Stability

CO1: Explain the various power system instabilities and dynamics in power systems.

CO2: Apply and explain different methods for analyzing power system stability.

CO3: Create mathematical models for dynamic and stability analysis of power systems.

CO4: Explain different power system controls, and their impact on the system stability.

CO5: Demonstrate how the transient stability of a power system can be analyzed by using equal area criterion.

CO6: Analyze electromechanical modes in power systems.

Project-I

CO1: Identify and Finalize problem statement by surveying variety of domains.

CO2: Perform requirement analysis and identify design methodologies

CO3: Present technical report by applying different Simulation tools and Evaluation metrics.

Project-II

CO1: Review the literature and develop solutions for framed problem statement.

CO2: Implement hardware and/or software techniques for identified problems.

CO3: Test and analyze the modules of planned project.

CO4: Write technical report and deliver presentation.

CO5: Apply engineering and management principles to achieve project goal

School of Architecture

B. Arch

Architectural Design

CO1: Implement complex two and three-dimensional graphic representation techniques using a wide variety of traditional and digital media, to reflect on and explain the architectural design process to a wide range of stakeholders.

CO2: Analyze and describe the built environment using terminology of basic design principles.

CO3: Apply basic design principles to create spatial solutions in future courses and projects.

Building Construction and Materials

CO1: Demonstrate fundamental knowledge of the systems and processes used to construct the built environment, including an understanding of industry terminology.

CO2: Work in a team environment to analyze existing building types, develop a list of programmatic requirements, sketch a schematic design, and use this information to develop drawings and models sufficient to present a competent architectural design solution.

CO3: Understand primary and specialized building materials used in building construction, their properties, classification & types available.

CO4: Application of materials in architectural design, their workability parameters and functional aspects.

History of Architecture

CO1: Understand architectural elements, forms, development trends, construction techniques, materials and technologies used in built environment through the times.

CO2: Understand transformation patterns in architecture during various kingdoms / time periods and analyze the contributing factors for the design development of different styles.

CO3: Familiarize students with the socio-economic, historical and political influences of time period in architectural development.

Architectural Drawing

CO1: Understand and apply various drawing tools and accessories used in drafting and lettering techniques to produce any geometrical composition and form.

CO2: Gather understanding about the scale measurement; plane geometry, solid geometry and projections used as drawing technique.

CO3: Demonstrate basic understanding and handling techniques of orthographic projection.

CO4: Represent three dimensional forms in design projects using graphical presentation skills.

Structures Systems

CO1: To introduce the basic components and concepts of a structure and its simple analysis involving experiments.

CO2: Compute mathematical formulations for dynamic problems through energy equation.

CO3: Determine structural stability of various building typologies through design and qualitative and quantities material analysis.

Building Services

CO1: To facilitate the students with building services that supports the functioning of a building in the area of Water supply, Sewerage, Electrical, Plumbing, Fire fighting, Vertical and Horizontal circulation, HVAC.

CO2: Learning about various equipment and fittings available in the market and preparing basic design layout of various services and typical details.

Estimation and Specification

CO1: To equip students with the necessary technical knowledge for calculating estimates with specifications and costing for various scale projects.

CO2: A holistic understanding of costing and budgeting of design projects.

CO3: Final costing exercise to be carried out where students can undertake the costing of their studio design project.

Town Planning

CO1: To understand the various levels of planning, planning principles & the process over a period of time.

CO2: To outline the scope and content of Urban planning, Urban renewal and Regional planning and the various plans to be prepared.

CO3: To enable students to understand how planning activities are regulated in the state at various levels.

Urban Design

CO1: The contemporary needs of the society and the role of spaces will be dealt along with the need for design development and control.

CO2: Understanding components of urban fabric, making a visual survey, understanding the various urban spaces in the city and their hierarchy.

CO3: Urban scale, Mass and Space, Expressive quality of built forms, spaces in public domain.

CO4: Conducting an urban design survey, analysis of data, formulating urban design guidelines and drawings for an area - practical problem solving.

Professional Ethics & Practice

CO1: To provide the students a general understanding of the architectural profession and the importance of ethics in professional practice.

CO2: To expose the students some of the important legislation which have a bearing on the practice of architectural profession.

Architectural Thesis

CO1: The overall aim of the thesis is to test whether a student has acquired the requisite skill and competence in architecture before becoming a fully fledged architect.

CO2: The entire 5 years of architectural design crown in the thesis Project to arouse students to involve in individual research and methodology to train them in handling projects independently.

CO3: The main areas of study and research can include advanced architectural design, contemporary design processes, urban design including urban-infill, rural settlements, environmental design, conservation and heritage precincts, landscape design, housing and topics related to construction technology.