Course Outcome for B.E. Biotechnology

Class	Semester	Name of the Subject	CO	COURSE OUTCOME
FE	I	Chemistry	824101.1	Analyse microscopic chemistry in terms of atomic and molecular orbitals and intermolecular forces.
			824101.2	Distinguish the ranges of the electromagnetic spectrum used for exciting different molecular energy levels in various spectroscopic techniques
			824101.3	Rationalise periodic properties such as ionization potential, electronegativity, oxidation states and electronegativity.
			824101.4	Rationalise bulk properties & processes using thermodynamic considerations
			824101.5	List major chemical reactions that are used in the synthesis of molecules.
FE	I	Engineering Graphics	824104.1	Introduction to engineering design and its place in society
			824104.2	Exposure to the visual aspects of engineering design
			824104.3	Exposure to engineering graphics standards
			824104.4	Exposure to solid modeling.
FE	I	English	824103.1	To acquire basic proficiency in English including reading and listening
			824103.2	To demonstrate proficiency in the use of written English, including proper spelling, Grammar and punctuation.
			824103.3	To enhance their ability to use spoken words in interpersonal communication, small group interactions and public speaking Comprehension, writing and speaking skills.
			824103.4	Become accomplished technical communicators.
FE	I	Mathematics - I	824102.1	Apply differential and integral calculus. Apart from some other applications they will have a basic understanding of Beta and Gamma functions.
			824102.2	The fallouts of Rolle's Theorem that is fundamental to application of analysis to Engineering problems.
			824102.3	The tool of Fourier series for learning advanced Engineering Mathematics.
			824102.4	To deal with functions of several variables that are essential in most branches of Engineering.The essential tool of matrices and linear algebra in a comprehensive manner.

Class	Semester	Name of the Subject	CO	COURSE OUTCOME
FE	I	Chemistry Lab	824106.1	Upon successful completion of lab Course, student will be able to: The chemistry laboratory course will consist of experiments illustrating the principles of chemistry relevant to the study of science and engineering. The students will learn to:
			824106.2	Estimate rate constants of reactions from concentration of reactants/products as a function of time
			824106.3	Measure molecular/system properties such as surface tension, viscosity, conductance of solutions, redox potentials, chloride content of water, etc
			824106.4	Synthesize a small drug molecule and analyse a salt sample .
FE	I	Engineering Graphics Lab	824108.1	Introduction to engineering design and its place in society
			824108.2	Exposure to the visual aspects of engineering design
			824108.3	Exposure to engineering graphics standards
			824108.4	Exposure to solid modeling.
FE	I	English Lab	824107.1	Students will be sensitized towards recognition of English sound pattern.
			824107.2	The fluency in speech will be enhanced.
FE	I	Workshop Practices	824105.1	Students will be able to fabricatecomponents with their own hands.
			824105.2	Get practical knowledge of the dimensional accuracies and dimensional tolerances possible
			824105.3	with different manufacturing processes.
			824105.4	Assemble different components, they will be able to produce small devices oftheir interest.
FE	II	Physics	824201.1	To study Bragg's Law and introduced to the principles of lasers, types of lasers and applications
			824201.2	Various terms related to properties of materials such as, permeability, polarization, etc.
			824201.3	Some of the basic laws related to quantum mechanics as well as magnetic and dielectric
			824201.4	properties of materials
			824201.5	Simple quantum mechanics calculations
			824201.6	Nanotechnology and their industrial applications.

Class	Semester	Name of the Subject	CO	COURSE OUTCOME
FE	II	Mathematics-II	824202.1	Use mathematical tools needed in evaluating multiple integrals and their usage.
			824202.2	Apply effective mathematical tools for the solutions of differential equations that model physical processes.
			824202.3	Use tools of differentiation and integration of functions of a complex variable that are used in various techniques dealing engineering problems.
FE	II	Basic Electrical & Electronics Engineering	824203.1	Students will be able to demonstrate knowledge of circuit analysis using various basic laws and theorems of electrical circuits
			824203.2	Students will be able to demonstrate and understand definition and relationship of various AC circuits.
			824203.3	Understand working principle of PN junction diode, Zener diode and their applications.
			824203.4	Describe different configuration of Bipolar Junction Transistor.
			824203.5	Describe different configurations of FET
			824203.6	Understand operating principle Power Electronics Devices
			824203.7	Describe use of the Basic gate and Universal gate
FE	II	Programming for Problem Solving	824204.1	To formulate simple algorithms for arithmetic and logical problems
			824204.2	Understand the fundamentals of C programming.
			824204.3	To test and execute the programs and correct syntax and logical errors
			824204.4	Choose the loops and decision making statements to solve the problem.
			824204.5	To decompose a problem into functions and synthesize a complete program using divide and conquer approach
			824204.6	To use arrays, pointers and structures to formulate algorithms and programs
FE	II	Physics Lab	824205.1	To study Bragg's Law and introduced to the principles of lasers, types of lasers and applications
			824205.2	Various terms related to properties of materials such as, permeability, polarization, etc.
			824205.3	Some of the basic laws related to quantum mechanics as well as magnetic and dielectric
			824205.4	properties of materials

Class	Semester	Name of the Subject	CO	COURSE OUTCOME
			824205.5	Simple quantum mechanics calculations
			824205.6	Nanotechnology and their industrial applications.
FE	II	Basic Electrical and Electronics Engineering Lab.	824206.1	Identify electrical and electronics components/equipments.
			824206.2	Simplify D.C. network using Superposition Theorem.
			824206.3	Simplify D.C. network using Thevenin's Theorem.
			824206.4	Learn diode V-I Characteristic
			824206.5	Understand BJJ as a switch
			824206.6	Understand LED, JFET, SCR V-I characteristics
FE	II	Programming for Problem Solving Lab	824207.1	Understand the fundamentals of C programming.
			824207.2	Choose the loops and decision making statements to solve the problem.
			824207.3	Use functions to solve the given problem.
			824207.4	Implement different Operations on arrays.
			824207.5	Understand strings and structures.
			824207.6	Understand the usage of pointers.
SE	III	Microbiology	824304.1	Apply their knowledge in research related to the use of microbes for human welfare like food production, pigment production, pharmaceutical products etc.
			824304.2	format;
			824304.3	Analyze and simplify the complex issues in microbiology.
			824304.4	Interpret the mode of action of antibiotics and therapeutic agents.
			824304.5	Describe the concepts of microbial growth kinetics and continuous cultures.
SE	III	Biology	824301.1	Describe the concepts of modern cell theories and identify the differences in eukaryotic and prokaryotic cells.
			824301.2	Explain the major groups of animal and plant kingdom

Class	Semester	Name of the Subject	CO	COURSE OUTCOME
			824301.3	Demonstrate the advanced techniques in plant and animal tissue culturing, and able to calculate the growth rate of cells through culturing
			824301.4	Classify the microorganisms through different isolation techniques and illustrate microbial culture techniques
			824301.5	Illustrate mechanism involved in rDNA technology and apply the different aspects of Biotechnology
SE	III	Bioprocess Calculations	824302.1	Differentiate between different units and dimensions and solve relevant proble
			824302.2	Have the ability to identify, formulate and solve engineering problems
			824302.3	Have gained fundamental skills in solving material balance problems with and without bioreactions
			824302.4	Have gained fundamental skills in solving energy balance problems with and without bioreactions.
			824302.5	Understand humidity, humid heat, humid volume, dry-bulb temperature, wet-bulb temperature, psychometric chart & steam table
SE	III	Unit Operations	824303.1	Understand the following terms in relation to fluid mechanics: viscosity, density, specific gravity, and surface tension. Measure the properties listed above for any given fluids.
			824303.2	Apply their knowledge to minimize head losses and evaluate flow through a pipe system by using different types of flow meters.
			824303.3	Understand the principles of manometer to calculate pressure of the fluids
			824303.4	Understand the handling of solid and size reduction of solid
			824303.5	Identify the separation technique
SE	III	Bioprocess Industrial Economics & Management	824305.1	Apply the basic knowledge of economics in order to design the bioprocesses at low cost
			824305.2	Apply knowledge of marketability to communicate effectively about various bioprocesses of products.
			824305.3	Apply the knowledge to set up a bioprocess Industry in all respect

Class	Semester	Name of the Subject	CO	COURSE OUTCOME
			824305.4	Estimate the cost of final product
			824305.5	Calculate the profitability and losses during the product formation
SE	III	Unit Operations Lab	324306.1	Determine properties of Fluids and Solid .
			324306.2	Identify the problem and solve the problem .
			324306.3	Determine the coefficient of Venturi meter, Orifice meter.
			324306.4	Apply the knowledge to estimate minor losses in pipes.
			324306.5	Determine the friction factor for given pipe.
SE	III	Microbiology Lab		Use the microscope effectively and observe and identify the characteristics of microorganisms.
			324307.2	Stain the microbes for better visualization and characterization of cells and cell organelles
			324307.3	Identify and examine the microorganisms from the food sample and environment.
			324307.4	Enumerate the microbes by various methods including viable cell count, haemo-cytometer and turbidity measurement.
			324307.5	Prepare the media and cultivate the microorganisms by different methods.
SE	III	Good Manufacturing practises Lab	324308.1	Follow fundamental compliance requirements for current GMP.
			324308.2	Apply compliance protocols in all efforts aimed at generating regulated data for evaluation by the US FDA and regulatory agencies overseas.
			324308.3	Demonstrate their understanding good practices in production.
			324308.4	Demonstrate the packaging techniques of bioproducts
			324308.5	Explain the role and functions of various preservative components.
SE	IV	Process Heat Transfer	824402.1	Demonstrate general applications of heat transfer modes as conduction, convection and radiation in biochemical process industry.
			824402.2	Design a process , system and to conduct the experiments.
			824402.3	Demonstrate working and principle of all types of evaporators which are used in industries

Class	Semester	Name of the Subject	CO	COURSE OUTCOME
			824402.4	Know working and principles of all types of Heat Exchanger equipments which are widely used in biochemical, fermentation and pharmaceutical industries.
			824402.5	Design of heat exchange equipments.
SE	IV	Immunology	824403.1	Understand the basic principles of modern immunology and an introduction to methods used in immunological research
			824403.2	Describe the cells, molecules and pathways involved in the induction and regulation of innate and adaptive immune responses and how regulatory responses can be exploited therapeutically
			824403.3	Demonstrate an understanding of how vaccines work and of the requirements for developing new safe and effective injectibles and mucosal vaccines.
			824403.4	Integrate information on the role of the immune system in asthma and chronic obstructive pulmonary disease and the use of this information to develop new therapies for these conditions.
			824403.5	Explain the role of applied immunology parameters.
SE	IV	Biochemistry	824404.1	Identify the classes of biomolecules and their role in the biological system.
			824404.2	Explain the functions and properties of biomolecules
			824404.3	Explain the synthesis of biomolecules in biological system and how it directly relate the energy generation in body.
			824404.4	Separate biomolecules from the source by biochemical techniques and its application for human welfare
			824404.5	To demonstrate and explain concept of enzymes & membrane transport
				Average
SE	IV	Intellectual Property Rights & Entrepreneurship	824405.1	Choose which type of IPR they should apply for.
			824405.2	Adopt environment friendly approach industrially.
			824405.3	Understand entrepreneurial aspects.
			824405.4	Understand the basics of marketing management.

Class	Semester	Name of the Subject	CO	COURSE OUTCOME
			824405.5	Apply project Management Techniques to real life industrial problems
SE	IV	Biostatistics	424401.1	Will be able to use Probability distributions effectively. Also will be able to know a given set of data will follow which distribution.
			424401.2	Will be able to calculate the mean and variance of a probability distribution.
			424401.3	Can use sampling for performing any real experiment which is otherwise very expensive
			424401.4	Will be able to use t-test, F-test and chi square test etc. for Goodness of fit to test hypothesis.
			424401.5	Able to apply Randomization to avoid confounding the variable under investigation with other uncontrollable variables.
SE	IV	Process Heat Transfer Lab	424406.1	Demonstrate general applications and use of heat exchange equipments in industries.
			424406.2	Control the different parameters which are required for various processes industries.
			424406.3	Analyze and interpret the data of various processes.
			424406.4	Determine rate of heat transfer through various modes of heat transfer.
			424406.5	Design heat exchange equipment.
SE	IV	Immunology Lab	424407.1	Apply the basic fundamentals in antigen antibody reaction for designing the experiment.
			424407.2	Perform the analytical techniques in immunology in the industry.
			424407.3	Describe various types of antigen and antibody reactions at in vitro conditions.
			424407.4	Perform Immunoelectrophoresis.
			424407.5	Demonstrate the various immunodiffusion techniques.
SE	IV	Biochemistry Lab	424408.1	Estimate the amount of different biomolecules like carbohydrates, proteins, nucleic acids from various sources.
			424408.2	Understand the basic principle of isoelectric precipitation.

Class	Semester	Name of the Subject	CO	COURSE OUTCOME
			424408.3	Apply the basic properties of biomolecules for their separation from mixture.
			424408.4	Extract the lipids from various biological sources.
			424408.5	Understand the basic principles of thin layer chromatography and gel electrophoresis.
SE	IV	Lab Environmental Biotechnology	424409.1	Communicate their understanding of environmental science to a lay audience.
			424409.2	Demonstrate through presentation an understanding of the global character of environmental problems and ways of solving them, including collaborative efforts spanning local to global scale.
			424409.3	Use the techniques, skill and modern engineering tools necessary for engineering practice.
			424409.4	Apply the knowledge of engineering principles to living entities for societal welfare.
			424409.5	Work in multidisciplinary stream.
TE	V	Enzyme Engineering	824503.1	Classify enzymes on the basis of their working mechanism.
			824503.2	Calculate the enzyme kinetics and activity by performing various assays.
			824503.3	Characterize the enzymes by using modern equipments.
			824503.4	Immobilize enzyme by various immobilization techniques for better stability and activity as well as to reduce their losses during use.
			824503.5	Apply molecular mechanism of various enzymes in different metabolic pathways.
TE	V	Reaction Engineering	824502.1	Determine the rate and order of reaction from experimental data.
			824502.2	Analyze and interpret the kinetics of reactions.
			824502.3	Apply the fundamentals of chemical reaction engineering to design different types of reactors.
			824502.4	Explain heterogeneous system with its applications.
			824502.5	Use the various types of reactors for different types of homogeneous and heterogeneous reactions
TE	V	Molecular Biology	824501.1	Describe basic molecular and genetic concepts and principles.

Class	Semester	Name of the Subject	CO	COURSE OUTCOME
			824501.2	Communicate the fundamental concepts of molecular biology both in written and in oral format.
			824501.3	Demonstrate nucleic acid replication and its types.
			824501.4	Critically evaluate data, develop and design experiments to address a novel problem in the form of project.
			824501.5	Demonstrate advanced knowledge in a specialized field of molecular biology
TE	V	Professional Elective Course –I Food Biotechnology	824541.1	Find out the different microorganism responsible for food spoilage.
			824541.2	Distinguish different constituents of the food and their role in body.
			824541.3	Use their knowledge to preserve the food.
			824541.4	Apply their knowledge of unit operation in food industry.
			824541.5	Use the techniques, skill and modern engineering tools necessary for engineering practice.
TE	V	Open Elective Course – I Biofuel and Alcohol Technology	824551.1	Understand Biofuel and biomass production.
			824551.2	Critically appraise logistical issues associated with implementing large scale biofuel and biomass energy production.
			824551.3	Perform technical, economic and environmental comparisons of various energy systems.
			824551.4	Implement the various methods of fermentations processes.
			824551.5	Illustrate the alcohol recycling & biochemistry of alcohol.
TE	V	Lab Molecular Biology	524506.1	Isolate the genetic material e.g. DNA & RNA from different cells.
			524506.2	Calculate molecular weight by using DNA marker with agarose gel electrophoresis
			524506.3	Extract of chromosomal DNA from onion cells
			524506.4	Determine the melting temperature (Tm) and base composition of DNA from thermal denaturation characteristics.
			524506.5	Quantify Nucleic acids.

Class	Semester	Name of the Subject	CO	COURSE OUTCOME
TE	V	Lab Reaction Engineering	524507.1	Understand the kinetic study of various chemical and biochemical reactions used in process industries
			524507.2	To design various types of Reactors.
			524507.3	Demonstrate an ability to use the techniques, skills, and modern engineering tools necessary for engineering practice.
			524507.4	Demonstrate the understanding of professional and ethical responsibilities.
			524507.5	Understand the environmental issues and to provide solutions for green and clean technologies
TE	V	Lab Pharmaceutical Biotechnology	524508.1	Isolate the microbes by air microbiology: solid and liquid impingement methods.
			524508.2	Apply the use coliform count of water by MPN technique.
			524508.3	Identify the sterility as per IP.
			524508.4	Explain the functions of selective media: McConkey Agar, Cetrimide Agar, Vogel Johnson, Salt mannitol agar.
			524508.5	Study various immunology and biochemical test.
TE	V	Minor Project (Stage–I)	524509.1	Demonstrate a sound technical knowledge of their selected project topic.
			524509.2	Undertake problem identification, formulation and solution.
			524509.3	Design engineering solutions to complex problems utilizing a systems approach.
			524509.4	Conduct an engineering project.
			524509.5	Demonstrate the knowledge, skills and attitudes of a professional engineer.
TE	VI	Genetic Engineering	824601.1	Apply the knowledge of rDNA technology for the construction of novel gene for the better use with wide functionality.
			824601.2	Use various vector systems to study functionality of inserted gene.
			824601.3	Demonstrate various techniques in gene sequencing.
			824601.4	Apply the knowledge of genetics for human welfare in disease diagnosis, in criminal cases as well as pharmaceuticals for drug designing and development.

Class	Semester	Name of the Subject	CO	COURSE OUTCOME
			824601.5	Explain mechanism of molecular markers that are used in genetic engineering study.
TE	VI	Mass Transfer	824602.1	Demonstrate the knowledge of various mass transfer operations and its application in process industries.
			824602.3	Explain & apply knowledge of different separation techniques in downstream processing.
			824602.2	Apply appropriate criteria for selection among alternative separation technologies.
			824602.4	Increase yield and purity of various products in process industries by applying knowledge.
			824602.5	Ability to analyze and design mass transfer equipments.
TE	VI	Professional Elective Course - II Plant Biotechnology	824641.1	Understand the bioethical issues related to plant Biotechnology.
			824641.2	Apply the advanced techniques in plant tissue culturing for making the modified varieties of plants.
			824641.3	Develop the disease and pest resistant plants.
			824641.4	Produce the value added products which are having commercial value by applying the protocols of fermentation technology.
			824641.5	Explore the options for plant biotechnology in higher study.
TE	VI	Open Elective Course - II Bioprocess Instrumentation and Analysis	824654.1	Get familiar with various standards and calibration methods used in Instrumentation and Instrumental Analysis.
			824654.2	Get knowledge of basic principles behind the working of different analytical instruments and its application in industries.
			824654.3	Use suitable measurement technique for process industries.
			824654.4	Control system for monitoring of various parameters in bioprocess industries and to maintain safety.
			824654.5	Get insights of flame photometry and microscopy.

Class	Semester	Name of the Subject	CO	COURSE OUTCOME
TE	VI	Bioprocess Engineering	824603.1	Apply knowledge of chemical and mechanical engineering for design of biological system in biotech industries.
			824603.2	Design and conduct experiments on different bioreactors and to analyze and interpret data for optimization of process.
			824603.3	Design various bioprocess equipment to meet desired needs of mankind within realistic constrain like social, ethical, health and safety.
			824603.4	Get the knowledge of properties of materials and its view in designing bioprocess equipment within the standards prescribed by regulating authority in India and world.
			824603.5	Integrate knowledge of bioscience, biochemical engineering, in commercial context to solve a substantial range of bio- processing and biological engineering problems and issues for production of value added products for societal development.
TE	VI	Lab Genetic Engineering	624606.1	Use restriction digestion enzyme for various applications of DNA study
			624606.2	Use ligation enzyme to join different DNA to form new product
			624606.3	Prepare plasmid for various applications
			624606.4	Use DNA fingerprinting method by RFLP for various applications.
			624606.5	Map the genomic DNA
TE	VI	Lab Mass Transfer	624607.1	Recognize types of diffusion and the mechanism of diffusion.
			624607.2	Demonstrate an ability to solve the mass transfer problems by calculating the Mass Transfer Coefficient.
			624607.3	Use practical considerations for designing and operation of mass transfer operations / equipments.
			624607.4	Identify, formulate, design and provide the solution to various chemical engineering problems.
			624607.5	Understand the environmental issues and to provide solutions for green and clean technologies
TE	VI	Lab Bioprocess Engineering	624608.1	Understand the basic design of the fermenter.

Class	Semester	Name of the Subject	CO	COURSE OUTCOME
			624608.2	Apply the knowledge to study kinetics of the process.
			624608.3	Apply the knowledge of sensors and various sterilization techniques involved in the process.
			624608.4	Perform various fermentation processes
			624608.5	Perform immobilization of various bioproducts
TE	VI	Minor Project	624609.1	Demonstrate a sound technical knowledge of their selected project topic.
			624609.2	Undertake problem identification, formulation and solution.
			624609.3	Design engineering solutions to complex problems utilizing a systems approach
			624609.4	Conduct an engineering project
			624609.5	Demonstrate the knowledge, skills and attitudes of a professional engineer.
BE	VII	Bioinformatics	724701.1	To understand the theoretical basis behind bioinformatics.
			724701.2	Search databases accessible on the WWW for literature relating to molecular biology and biotechnology.
			724701.3	Manipulate DNA and protein sequences using stand-alone PC programs and programs available on the WWW. Find homologues, analyze sequences, construct and interpret evolutionary trees.
			724701.4	View and interpret these biomelecules structures.
			724701.5	Understand homology modeling and computational drug design.
BE	VII	Professional Elective Course - III Crop Improvement	724721.1	Students would be able to do transformation of crop plants to increase crop productivity.
			724721.2	Apply molecular markers for MAS in breeding.
			724721.3	Explain and demonstrate the different molecular markers.
			724721.4	Describe the metabolic systems in plants.
			724721.5	Study the Biochemistry involved in plant cells.

Class	Semester	Name of the Subject	CO	COURSE OUTCOME
BE	VII	Professional Elective Course - IV Analytical Methods in Biotechnology	724731.1	Interpret electromagnetic spectrums.
			724731.2	Handle various spectroscopic techniques.
			724731.3	Perform various elctroanalytical methods.
			724731.4	Handle various types of microscopes.
			724731.5	Determine structures of biomolecules
BE	VII	Open Elective Course - III Bioprocess Optimization and Plant Design	724741.1	Optimize various bioprocesses
			724741.2	Conduct technical feasibility survey
			724741.3	Utilize Statistical and Non statistical approach for Bioprocess optimization
			724741.4	Apply various optimization techniques in the design of fermenter.
			724741.5	Evaluate of heat load for any fermentation process
BE	VII	Lab Bioinformatics	724705.1	Apply practical knowledge for information retrieval.
			724705.2	Apply the basic knowledge for developing and using tools for sequence analysis of biomolecules.
			724705.3	Apply the basic knowledge for developing and using tools for structure analysis of biomolecules.
			724705.4	Carry out sequence alignment and analysis.
			724705.5	Explore the options for Bioinformatics in higher study
BE	VII	Lab Plant Tissue Culture	724706.1	Apply the basics of the lab design
			724706.2	Utilize various sterilization techniques
			724706.3	Apply the knowledge of various PTC techniques
			724706.4	Produce the synthetic seeds

Class	Semester	Name of the Subject	CO	COURSE OUTCOME
			724706.5	Understand the genetic engineering approaches related to the course
BE	VII	Project (Stage - I)	724707.1	Demonstrate a sound technical knowledge of their selected project topic.
			724707.2	Undertake problem identification, formulation and solution.
			724707.3	Design engineering solutions to complex problems utilizing a systems approach.
			724707.4	Conduct an engineering project
			724707.5	Demonstrate the knowledge, skills and attitudes of a professional engineer.
BE	VIII	Bioprocess Industries	824801.1	Apply knowledge of chemical and mechanical engineering for design of biological system in biotech industries.
			824801.2	Get the knowledge of properties of materials and its view in designing bioprocess equipment within the standards prescribed by regulating authority in India and world.
			824801.3	Design a system, component, or process to meet desired needs within realistic constraints such as economic, environmental, social, political, ethical, health and safety, manufacturability and sustainability.
			824801.4	Work in an industrial or research position within the bioprocess or related fields.
			824801.5	Demonstrate the technology behind Biotransformation
BE	VIII	Professional Elective Course - V Molecular Biology of Cancer	824821.1	Understand the types of cancer.
			824821.2	Understand the metabolism of carcinogenesis.
			824821.3	Study the about the different types of Oncogenes.
			824821.4	Understand various techniques for detection of cancer.
			824821.5	Apply the knowledge of various types of cancer therapy.
BE	VIII	Professional Elective Course - VI Industrial Biotechnology	824833.1	Get familiarize with various enzymes used in industry.
			824833.2	Gain the knowledge regarding Primary and Secondary metabolites.

Class	Semester	Name of the Subject	CO	COURSE OUTCOME
			824833.3	Apply their knowledge to effectively manage hazardous waste.
			824833.4	Apply various strategies of bioremediation.
			824833.5	Adopt eco friendly approaches and renewable energy alternatives to minimize the pollution.
BE	VIII	Open Elective Course - IV Agricultural Biotechnology	824843.1	Formulate various types of medias required in plant tissue culture.
			824843.2	Breed various crop varieties.
			824843.3	Develop transgenic varieties of crops.
			824843.4	Performs tissue culturing of various plants.
			824843.5	Apply Advanced technologies available for crop improvement
BE	VIII	Lab Downstream Processing	824806.1	Isolate the biomolecules/bioproducts from the fermentation broths.
			824806.2	Recover the intracellular products from the microbial cells by applying the cell disruption techniques.
			824806.3	Precipitate the soluble bioproducts from the fermentation broths such as proteins and enzymes.
			824806.4	Identify the recovered product quantitatively and qualitatively by applying the analytical techniques on them.
			824806.5	Study and estimate the concentration of the recover bioproducts.
BE	VIII	Lab Bioprocess Industries	824805.1	Demonstrate a detailed knowledge of growth kinetics.
			824805.2	Study the effect of substrate and product concentration on biomass yield for baker's yeast production Interpret the significance of Biotechnology in production.
			824805.3	Demonstrate a detailed knowledge of therapeutic agents of microbial origin and their production.
			824805.4	Demonstrate knowledge of plant tissue culture systems and artificial seed production.
			824805.5	Produce single cell protein by fermentation.

Class	Semester	Name of the Subject	CO	COURSE OUTCOME
BE	VIII	Project (Stage-II)	824807.1	Demonstrate a sound technical knowledge of their selected project topic.
			824807.2	Undertake problem identification, formulation and solution.
			824807.3	Design engineering solutions to complex problems utilizing a systems approach.
			824807.4	Conduct an engineering project
			824807.5	Demonstrate the knowledge, skills and attitudes of a professional engineer

Courese Outcome for B.E. Chemical Engineering

Class	Semester	Name of the Subject	CO	Course Outcome
FE	I	Chemistry	819101.1	Analyse microscopic chemistry in terms of atomic and molecular orbitals and intermolecular forces.
			819101.2	Distinguish the ranges of the electromagnetic spectrum used for exciting different molecular energy levels in various spectroscopic techniques
			819101.3	Rationalise periodic properties such as ionization potential, electronegativity, oxidation states and electronegativity.
			819101.4	Rationalise bulk properties & processes using thermodynamic considerations
			819101.5	List major chemical reactions that are used in the synthesis of molecules.
FE	I	Engineering Graphics	819104.1	Introduction to engineering design and its place in society
			819104.2	Exposure to the visual aspects of engineering design
			819104.3	Exposure to engineering graphics standards
			819104.4	Exposure to solid modeling.
FE	I	English	819103.1	To acquire basic proficiency in English including reading and listening
			819103.2	To demonstrate proficiency in the use of written English, including proper spelling, Grammar and punctuation.
			819103.3	To enhance their ability to use spoken words in interpersonal communication, small group interactions and public speaking Comprehension, writing and speaking skills.
			819103.4	Become accomplished technical communicators.
FE	I	Mathematics - I	819102.1	Apply differential and integral calculus. Apart from some other applications they will have a basic understanding of Beta and Gamma functions.
			819102.2	The fallouts of Rolle's Theorem that is fundamental to application of analysis to Engineering problems.
			819102.3	The tool of Fourier series for learning advanced Engineering Mathematics.
			819102.4	To deal with functions of several variables that are essential in most branches of Engineering.The essential tool of matrices and linear algebra in a comprehensive manner.

Class	Semester	Name of the Subject	CO	Course Outcome
FE	I	Chemistry Lab	819106.1	Upon successful completion of lab Course, student will be able to: The chemistry laboratory course will consist of experiments illustrating the principles of chemistry relevant to the study of science and engineering. The students will learn to:
			819106.2	Estimate rate constants of reactions from concentration of reactants/products as a function of time
			819106.3	Measure molecular/system properties such as surface tension, viscosity, conductance of solutions, redox potentials, chloride content of water, etc
			819106.4	Synthesize a small drug molecule and analyse a salt sample .
FE	I	Engineering Graphics Lab	819108.1	Introduction to engineering design and its place in society
			819108.2	Exposure to the visual aspects of engineering design
			819108.3	Exposure to engineering graphics standards
			819108.4	Exposure to solid modeling.
FE	I	English Lab	819107.1	Students will be sensitized towards recognition of English sound pattern.
			819107.2	The fluency in speech will be enhanced.
FE	I	Workshop Practices	819105.1	Students will be able to fabricatecomponents with their own hands.
			819105.2	Get practical knowledge of the dimensional accuracies and dimensional tolerances possible
			819105.3	with different manufacturing processes.
			819105.4	Assemble different components, they will be able to produce small devices oftheir interest.
FE	II	Physics	819201.1	To study Bragg's Law and introduced to the principles of lasers, types of lasers and applications
			819201.2	Various terms related to properties of materials such as, permeability, polarization, etc.
			819201.3	Some of the basic laws related to quantum mechanics as well as magnetic and dielectric
			819201.4	properties of materials
			819201.5	Simple quantum mechanics calculations
			819201.6	Nanotechnology and their industrial applications.

Class	Semester	Name of the Subject	CO	Course Outcome
FE	II	Mathematics-II	819202.1	Use mathematical tools needed in evaluating multiple integrals and their usage.
			819202.2	Apply effective mathematical tools for the solutions of differential equations that model physical processes.
			819202.3	Use tools of differentiation and integration of functions of a complex variable that are used in various techniques dealing engineering problems.
FE	II	Basic Electrical & Electronics Engineering	819203.1	Students will be able to demonstrate knowledge of circuit analysis using various basic laws and theorems of electrical circuits
AC			819203.2	Students will be able to demonstrate and understand definition and relationship of various AC circuits.
			819203.3	Understand working principle of PN junction diode, Zener diode and their applications.
			819203.4	Describe different configuration of Bipolar Junction Transistor.
			819203.5	Describe different configurations of FET
			819203.6	Understand operating principle Power Electronics Devices
			819203.7	Describe use of the Basic gate and Universal gate
FE	II	Programming for Problem Solving	819204.1	To formulate simple algorithms for arithmetic and logical problems
			819204.2	Understand the fundamentals of C programming.
			819204.3	To test and execute the programs and correct syntax and logical errors
			819204.4	Choose the loops and decision making statements to solve the problem.
			819204.5	To decompose a problem into functions and synthesize a complete program using divide and conquer approach
			819204.6	To use arrays, pointers and structures to formulate algorithms and programs
FE	II	Physics Lab	819205.1	To study Bragg's Law and introduced to the principles of lasers, types of lasers and applications
			819205.2	Various terms related to properties of materials such as, permeability, polarization, etc
			819205.3	Some of the basic laws related to quantum mechanics as well as magnetic and dielectric
			819205.4	properties of materials
			819205.5	Simple quantum mechanics calculations

Class	Semester	Name of the Subject	CO	Course Outcome
			819205.6	Nanotechnology and their industrial applications.
FE	II	Basic Electrical and Electronics Engineering Lab.	819206.1	Identify electrical and electronics components/equipments.
			819206.2	Simplify D.C. network using Superposition Theorem.
			819206.3	Simplify D.C. network using Thevenin's Theorem.
			819206.4	Learn diode V-I Characteristic
			819206.5	Understand BJJ as a switch
			819206.6	Understand LED, JFET, SCR V-I characteristics
FE	II	Programming for Problem Solving Lab	819207.1	Understand the fundamentals of C programming.
			819207.2	Choose the loops and decision making statements to solve the problem.
			819207.3	Use functions to solve the given problem.
			819207.4	Implement different Operations on arrays.
			819207.5	Understand strings and structures.
			819207.6	Understand the usage of pointers.
SE		Industrial Chemistry	819301.1	Draw symbols and flow diagrams for the manufacturing of chemical products.
			819301.2	Understand the importance of unit operations and unit processes in chemical process Industries.
			819301.3	Understand the workingof processequipmentsin the manufactureofchemicals.
			819301.4	Analyze the processparameters in the manufacture of petrochemicals.
			819301.5	Demonstrate the basics ofconversion ofraw materials into finishedproducts.
SE	III	Thermodynamics-I	819302.1	Understand the aspects of chemical classical thermodynamics.
			819302.2	Apply mass and energy balances to different type of systems.
			819302.3	Solve problems involving liquefaction,refrigeration.

Class	Semester	Name of the Subject	CO	Course Outcome
			819302.4	Apply the knowledge of Le-Chatelier sprinciple in finding optimum parameters in the manufacture of important chemical products
			819302.5	Identify the critical constant parameters forliquefactionofgases.
SE	III	Engineering and Solid Mechanics	819303.1	Understand the useof basic concepts ofresolution and composition of forces
			819303.2	Analyse beams, truss or engineering component by applying conditions of equilibrium
			819303.3	Understand the different stresses and strains occurring in components of structure
			819303.4	Calculatethe deformations such asaxial, normal deflections under different loading conditions
			819303.5	Display knowledge of torsion and its application.
SE	III	Fluid Mechanics	819304.1	Understand the role of mechanical and hydrodynamical unit operations in the field of chemical engineering.
			819304.2	Analyze key concepts and fundamental principles, together with the assumptions made in their development, pertaining to fluid behavior, both in static and flowing conditions.
			819304.3	Demonstrate to deal effectively with practical engineering situations, including analysis and design of engineering systems and devices involving fluids and flow.
			819304.4	Understand the knowledge of pipe fittings and pumping system important in chemical industries
			819304.5	Identify,formulate,design and provide the solution to various chemical engineering problems.
SE	III	Industrial Organization and Management	819305.1	Understand and apply the principles of management with scientific view, and will contribute to the profitable growth of industry.
			819305.2	Study various managerial skills which will help them to share responsibilities and will make them able to work effectively in diverse, multicultural environments.
			819305.3	Demonstrate ability to work in multidisciplinary team and will display communication skills.

Class	Semester	Name of the Subject	CO	Course Outcome
			819305.4	Design sound purchasing skill ability and Inventory Control strategies, and simplistic materials management system.
			819305.5	Develop,implement,and improve integrated systems that include people, materials, information,equipment,and energy and will provide engineering solutions in a global,economic,environmental, and societal context.
SE		Thermodynamics-I Lab	819306.1	Accustom concepts of heat, work, and energy and their interrelations.
			819306.2	Under stand basic thermodynamic properties and units.
			819306.3	Demonstrate the ability for calculating heat of solution, heat of neutralization,heat of hydration of a chemical reaction.
			819306.4	Execute the knowledge for determining enthalpy change, entropy change and free energy change of a particular reaction.
			819306.5	Apply the knowledge of fundamental thermodynamic properties and thermochemistry principles in chemical industries**.**
SE	III	Fluid Mechanics Lab	819307.1	Analyze potential head, kinetic head and pressure head using Bernouillis theorem.
			819307.2	Demonstrate how to measure flow rates of fluids.
			819307.3	Analyze laminar or turbulent or transient nature of flow.
			819307.4	Apply the knowledge of characterization of pumps.
			819307.5	Apply the knowledge fluid mechanics.
SE	III	Chemical Engineering Lab-I	819308.1	Gain knowledge of experimental techniques for verifying theoretical concepts.
			819308.2	Apply experimental skills for purification of impure substances.
			819308.3	Display the ability to carry qualitative & quantitative chemical analysis.
			819308.4	Apply the basics of experimentation in analysis of oil and petroleum samples.
			819308.5	Demonstrate the analytical skills for solving problems arising during chemical analysis.
SE	IV	Biology	819401.1	Explain the structure and importance of different biomolecules for different cellular functions and metabolic activities in the living organisms
			819401.2	Explain the conditionsrequired for growth,characteristics of growth and development.

Class	Semester	Name of the Subject	CO	Course Outcome
			819401.3	Explain major components of celland tissue culture media, e.g. minerals, growthfactors, hormones, and what governs the choice of components.
			819401.4	Explain various techniques for isolation and identification of microorganisms with their role in various fields.
			819401.5	Explain the significanceofmodel organisms in recombinant DNA technology
SE	IV	Material Science	819402.1	To know the essential parameters for the formation of covalent, ionic and metallic bond.
			819402.2	To understand the structure-properties relationship for engineering materials.
			819402.3	To learn basics for creating desired structure.
			819402.4	To study the inorganic engineering materials & composites.
			819402.5	To learn the fundamental principles underlying and connecting the structure, processing, properties, and performance of materials systems.
SE	IV	Thermodynamics -II	819403.1	Execute knowledge of basic scienceandengineeringafter studyofthe laws of thermodynamics and state functions.
			819403.2	Capable of identifying,formulating, designing and providing the solution to chemical engineering problems by study of calculations of entropy changes,Vant"Hoff equation.
			819403.3	Capable ofevaluating chemical reaction equilibrium
			819403.4	Display the research ability by designing, conducting, interpreting and analyzing to experimental data for preparing reports by study of the thermodynamic consistency test of VLE data.
			819403.5	Exhibit the skill of construction of pressure-composition and boiling point diagrams.
SE	IV	Material and Energy Balance Computations	819404.1	Analyze a particular process in whole or part.
			819404.2	Evaluate the economics of the various processes, design the various equipments and help in identifying the losses in processes.
			819404.3	Exhibit theskill of material balances and steady state energy balance for various systems.
			819404.4	Apply the techniques for increasing the efficiency of the chemical processes.

Class	Semester	Name of the Subject	CO	Course Outcome
			819404.5	Capable of use of humidity charts for engineering calculations.
SE	IV	Project Management and Entrepreneurship	819405 .1	Understand theimportanceofprojectplanningandmanagementofthe project to become successful entrepreneur.
			819405 .2	Display ability to design and develop newer products.
			819405 .3	Demonstrate abilityto work in multidisciplinary teams and understand the impact of engineering solutions in a global,economic,environmental, and societal context.
			819405 .4	Demonstrate capability about customer relationship management
			819405 .5	Exhibit skill about industrial policies for development of enterprise
SE	IV	Material Science Lab	819406.1	Underst and the importance of testing of materials from engineering point of view.
			819406.2	Apply the knowledge for providing structural engineering solutions.
			819406.3	Accustom the testing machines for testing of engineering materials.
			819406.4	Analyze experimental data for providing technical solutions.
			819406.5	Display the ability in proper selection of materials for specific applications.
SE	IV	Thermodynamics–II Lab	819407 .1	Understand the fundamental laws of thermodynamics.
			819407 .2	Understand Vapour-Liquid Equilibrium
			819407 .3	Display knowledge about partial molar properties, activity coefficient and the equilibrium constant in calculations.
			819407 .4	Use Van"tHoff Equation
			819407.5	Demonstrate for construction of pressure-composition & boiling point diagrams.
SE	IV	Material and Energy Balance Computations Lab	819408.1	Analyze a particular process in whole or part.
			819408.2	Evaluate the economics of the various processes, design the various equipments and help in identifying the losses in processes.
			819408.3	Apply the techniques for increasing the efficiency of the chemical processes.
			819408.4	Capable of use of humidity charts for engineering calculations

Class	Semester	Name of the Subject	CO	Course Outcome
			819408.5	Demonstrate the ability of calculating heat and material balances of combustion processes
SE	IV	Chemical Engineering Lab-II	819409 .1	Verify various theoretical principles through experimentation.
			819409 .2	Accustom the experimental skills in product preparations.
			819409 .3	Visualize practical implementation ofpropertechniques for the conversion of raw materials into finished products.
			819409 .4	Apply knowledge in investigating reaction rates of elementary reaction.
			819409 .5	Demonstrate the ability for providing technical solutions in the manufacture of products.
TE	V	Mass Transfer-I	819501.1	Learn about the basics of the mass transfer process.
			819501.2	Understand diffusion phenomenon in solids and fluids.
			819501.3	Demonstrate knowledge of mathematics, science and engineering principles.
			819501.4	Providing a sound process design of various equipments used in humidification, gas absorption/stripping, crystallization and drying operation.
			819501.5	Identify, formulate, design and provide the solution to various chemical engineering problems.
TE	V	Chemical Reaction Engineering-I	819502.1	Understand the basic concepts of chemical reaction engineering.
			819502.2	Compare various reactors.
			819502.3	Understand the Optimum temperature progression for single reaction, Isothermal, adiabatic, non adiabatic operation.
			819502.4	Know the residence time distribution of fluid in vessel & concept of micro and macro mixing.
			819502.5	Identify related calculation and solutions to chemical reaction engineering problems for designing chemical reactors.
TE	V	Particle and Fluid-Particle Processing	819503.1	Analyze solid particle characterization.

Class	Semester	Name of the Subject	CO	Course Outcome
			819503.2	Know the types of fluidization and its applications.
			819503.3	Analyze filtration data and select filtration equipments.
			819503.4	Calculate drag force and terminal settling velocity for single particles.
			819503.5	Demonstrate size enlargement; nucleation and growth of particles.
TE	V	Process Equipment Design (PEC - I)	819541.1	Exhibit design skills in chemical process industry and in a competitive manner how to design Heads, storage vessel, support for vessels, cylindrical vessels under external pressure, shell and tube heat exchanger, calendria type evaporator, reaction vessel, crystallizers, rotary dryer, thick wall high pressure vessel and turbine agitator.
			819541.2	Demonstrate the ability to perform the task by identifying, formulating, designing and providing the solution to various chemical engineering problems.
			819541.3	Identify, formulate, design and provide the solution to various chemical engineering problems.
			819541.4	Understand professional and ethical responsibilities formally and informally show the capacity of designing the product to meet economical and societal requirements.
			819541.5	Understand about the environmental issues and will provide solutions for green and clean technologies.
TE	V	Energy Engineering (OEC - I)	819551.1	Apply knowledge of mathematics, science, and engineering to various energies.
			819551.2	Analyze and interpret the data i.e. the conventional and nonconventional source of energy, national energy strategy and energy plans, energy power management, energy audit, various energy conversion processes, devices and the power plants.
			819551.3	Understand conventional energy sources like Coal and types of coal and byproduct, Petroleum, Natural gas and Refinery Products.
			819551.4	Demonstrate Fuel cells and design and operation of a Fuel cell.
			819551.5	Analyze Nuclear Energy, Solar Energy and Wind Energy.
TE	V	Mass Transfer-I Lab	819506.1	Recognize types of diffusion and the mechanism of diffusion

Class	Semester	Name of the Subject	CO	Course Outcome
			819506.2	Demonstrate an ability to solve the mass transfer problems by calculating the Mass Transfer Coefficient.
			819506.3	Use practical considerations for designing and operation of mass transfer operations /
			819506.4	Identify, formulate, design and provide the solution to various chemical engineering problems.
			819506.5	Understand the environmental issues and to provide solutions for green and clean technologies.
TE	V	Chemical Reaction Engineering-I Lab	819507.1	Demonstrate the concepts of chemical reaction engineering using knowledge of basic Sciences and Mathematics.
			819507.2	Accustom of reactors, residence time distribution and concept of micro and macro mixing.
			819507.3	Identify, formulate, design and provide the solution to various reactors such as Continuous Stirred Tank Reactor, Plug Flow Reactor, and Packed Bed Reactor by obtaining
			819507.4	Demonstrate the understanding of professional and ethical responsibilities.
			819507.5	Understand the environmental issues and to provide solutions for green and clean technologies.
TE	V	Chemical Engineering Lab-III	819508.1	Understand the size of the product according to utilization into proper size reduction equipment.
			819508.2	Visualize, formulates, analyze and solve basic engineering problem of equipments.
			819508.3	Accustom with scientific principles and apply them to the practice of engineering
			819508.4	Understand and predict the applications of filtration processes and its working and carrying out the design of engineering layout.
			819508.5	Design and fabricate screw conveyor, chain and flight.
TE	V	Minor Project (Stage–I)	819509.1	Demonstrate a sound technical knowledge of their selected project topic.
			819509.2	Undertake problem identification, formulation and solution.
			819509.3	Design engineering solutions to complex problems utilizing a systems approach.
			819509.4	Conduct an engineering project

Class	Semester	Name of the Subject	CO	Course Outcome
			819509.5	Demonstrate the knowledge, skills and attitudes of a professional engineer.
TE	VI	Mass Transfer-II	819601.1	Apply mass transfer principles to various phase equilibrium based separation processes viz. perform graphical calculations for binary distillation.
			819601.2	Understand and apply process design principles for large scale industrial separators – process design of liquid-liquid; solid liquid extraction.
			819601.3	Capable of identifying, formulating, designing and providing the solution to chemical engineering problems.
			819601.4	Develop the design of various equipments as per the standard specifications.
			819601.5	Demonstrate the caliber of mass transfer aspects in product design.
TE	VI	Chemical Reaction Engineering-II	819602.1	Apply basic kinetics and mass transfer principles for development of heterogeneous system rate expressions for fluid particle and fluid -fluid non catalytic reaction.
			819602.2	Demonstrate their ability how to prepare and use the catalyst for enhancements of reaction rate and understand its deactivation and generation.
			819602.3	Become competitive to undertake the designing of solid catalyzed reaction, Fluidized bed Reactors, Slurry bed reactors, Trickle bed reactors, Moving Bed Reactor, Isothermal and Adiabatic fixed bed reactor.
			819602.4	Display the research by designing, conducting, interpreting and analyzing experimental data for preparing reports.
			819602.5	Understand the environmental issues and to provide solutions for green and clean technologies.
TE	VI	Heat Transfer	819603.1	Understand conduction, convection and radiation modes applicable to design heat exchanging equipments widely used in chemical process and allied industry.
			819603.2	Apply the knowledge of individual and overall heat transfer coefficient for designing steady state and unsteady state heat transfer processes.
			819603.3	Provide suitable designing of heat exchanger and evaporator.
			819603.4	Demonstrate the understanding of professional and ethical responsibilities.

Class	Semester	Name of the Subject	CO	Course Outcome
			819603.5	Understand the environmental issues and to provide solutions for green and clean technologies.
TE	VI	Instrumentation & Instrumental Analysis (PEC - II)	819641 .1	Learn basics of instrumentation, dynamic and static characteristics of an instrument.
			819641 .2	Demonstrate the ability of measuring the quantities which are frequently involved in chemical process industries.
			819641 .3	Identify the instrument needed for measuring the quantity in different working atmospheres.
			819641 .4	Apply the knowledge for using modern tools and equipments in analytical research.
			819641 .5	Apply the instrumentation principles for solving real world problems.
TE	VI	Alternative Fuels (OEC - II)	819651.1	Display the skill of know of hydrogen, its production, on board storage, stationary storage, piping, dispensers, transportation, advantages and disadvantages, hazard, safety, standards and uses in IC and SI engine, CI engine.
			819651.2	Analyze the CNG production and its, storage, advantage and disadvantages, dispensing system, transportation, fuel kits, engine modification for CNG operation, CNG combustion.
			819651.3	Exhibit skills eco friendly use of biodiesel and its production, storage, dispensing, biodiesel standards, biodiesel transportation, advantages and disadvantages.
			819651.4	Apply means of maintaining productivity by identify composition and properties of producer gas.
			819651.5	Demonstrate the ability for providing solutions for use of ammonia and liquid nitrogen as a
TE	VI	Mass Transfer-II Lab	819606.1	Display skill of the theoretical principles and practical considerations for design and operation of mass transfer operations, processes.
			819606.2	Understand the engineering approaches to deriving the design equations for complex mass transfer operations.
			819606.3	Identify design requirement and predict the major process parameters in separation processes.

Class	Semester	Name of the Subject	CO	Course Outcome
			819606.4	Identify design requirement and predict the major process parameters in separation processes.
			819606.5	Understand the environmental issues and to provide solutions for green and clean technologies.
TE	VI	Chemical Reaction Engineering-II Lab	819607.1	Demonstrate about how enhance the rate of non catalytic heterogeneous chemical reactions.
			819607.2	Display skill of improvement in purity of ethanol using various reactive and extractive distillations.
			819607.3	Identify, formulate, design and provide the solution to absorption and adsorption processes for heterogeneous systems various.
			819607.4	Exhibit the understanding of professional and ethical responsibilities.
			819607.5	Understand the environmental issues and to provide solutions for green and clean technologies.
TE	VI	Heat Transfer Lab	819608.1	Determine thermal conductivity of metal rods and heat flux through composite wall.
			819608.2	Apply skill of calculation of heat transfer coefficient and fin efficiency in natural / forced convection.
			819608.3	Demonstrate determination of emissivity and Stefan Boltzmann Constant.
			819608.4	Display caliber of consideration about LMTD and overall heat transfer coefficient.
			819608.5	Demonstrate the understanding of professional and ethical responsibilities.
TE	VI	Minor Project	819609.1	Demonstrate a sound technical knowledge of their selected project topic.
			819609.2	Undertake problem identification, formulation and solution.
			819609.3	Identify, formulate, design and provide the solution to various chemical engineering problems.
			819609.4	Conduct an engineering project.
			819609.5	Demonstrate the knowledge, skills and attitudes of a professional engineer.

Class	Semester	Name of the Subject	CO	Course Outcome
BE	VII	Process Control	719701.1	Understand process dynamics and various forms of mathematical models required to express them, including differential equations, transfer functions, and frequency response plots.
			719701.2	Understand the main ideas behind advanced multivariable control
			719701.3	Capable to analyze, design and tune various control systems.
			719701.4	To function along with multidisciplinary teams
			719701.5	To be capable of setting and complete team projects.
BE	VII	Transport Phenomenon (PEC-III)	719721.1	Apply engineering principles and analyze problems dealing with transport phenomena.
			719721.2	Apply mathematics, science, and engineering principles to analyze transport phenomena
			719721.3	Implement and physically interpreting the transport mechanism.
			719721.4	Understanding various transport operations and collective effect of momentum, heat and mass transfer.
			719721.5	Display skill of various equation uses in momentum transfer.
BE	VII	Computer Aided Process Equipment Design (PEC-IV)	719731.1	Exhibit computer aided design skills in a competitive manner how to design of shell and tube heat exchanger and batch reactor -isothermal and non-isothermal heating and cooling medium.
			719731.2	Demonstrate the ability to perform the task by identifying, formulating, designing and providing the solution to various chemical engineering problems associated with single effect evaporator and distillation column.
			719731.3	Identify, formulate, design and provide the solution to various chemical engineering problems associate with the absorption column and rotary dryer.
			719731.4	Understand professional and ethical responsibilities formally and informally show the capacity of designing requires the module for vessel under internal pressure, heads and closures and vessel under external pressure and rectangular storage tank product to meet economical and societal requirements.

Class	Semester	Name of the Subject	CO	Course Outcome
			719731.5	Understand about computer aided design of tall vessels, thick-walled high pressure vessel, Skirt support, Lug support and Saddle supports along with the environmental issues and will provide solutions for green and clean technologies.
BE	VII	Plant Utility (OEC-III)	719741.1	Display the skill of steam generation and its application in chemical process plants.
			719741.2	Exhibit the knowhow about types of compressors and vacuum pumps & method of vacuum development.
			719741.3	Analyzed characteristics of refrigeration system& production of liquid N2 and O2.
			719741.4	Demonstrate use of insulation for meeting the process equipment requirement.
			719741.5	Identify formulating, designing and providing the various properties, use, sources and methods of generation of inert gases.
BE	VII	Process Control Lab	719705.1	Apply the knowledge of control theory for understanding the various processes, carried out in the Chemical Engineering Industry.
			719705.2	Demonstrate their ability of understanding the process control and its application by virtue of experimentation.
			719705.3	Apply the knowledge of first order control system.
			719705.4	Apply the knowledge of second order control system.
			719705.5	Apply the knowledge of Final Control Element system.
BE	VII	Instrumentation & Control Lab	719706.1	Develop expertise in handling laboratory instruments with due care & precautions.
			719706.2	Deliver the skill in calibration of instruments.
			719706.3	Demonstrate analytical skills in students through instrumental techniques.
			719706.4	Understand use chromatography.
			719706.5	Evaluate refractive index.
BE	VII	Project (Stage - I)	719707.1	Demonstrate a sound technical knowledge of their selected project topic.
			719707.2	Undertake problem identification, formulation and solution

Class	Semester	Name of the Subject	CO	Course Outcome
			719707.3	Design engineering solutions to complex problems utilizing a systems approach
			719707.4	Conduct an engineering project
			719707.5	Demonstrate the knowledge, skills and attitudes of a professional engineer
BE	VIII	Process Technology and Economics	819801.1	Describe sources and processes of manufacture of various industrially important chemicals.
			819801.2	Draw block diagrams/ process flow diagrams of the processes used for manufacture of industrially important inorganic chemicals.
			819801.3	Identify the major engineering problems involved in manufacturing and provide best possible solutions for the same.
			819801.4	Explain and calculate economic aspects of Projects involved in manufacturing of Chemical
			819801.5	Analyze the projects through economical evaluation of manufacturing practices.
BE	VIII	Chemical Plant Design and Project Engineering (PEC-V)	819821.1	Exhibit the role of Chemical Engineer in Chemical Plant Design and Development of the project.
			819821.2	Apply requisite skill of the Process Design: Choice of process continuous Vs. Batch processing Process Equipments and Materials Selection Scale up method and development of process flow sheet.
			819821.3	Develop the Plant Layout and understand about Location of Chemical Plant.
			819821.4	Understand the Site Preparations and Structures requires in the chemical industry and adopting the tool of management for planning, scheduling and controlling like PERT and CPM network analysis
			819821.5	Demonstrate use of the Process Auxiliaries for reducing the cost of piping with overall safety for the sustainable plant design.
BE	VIII	Petrochemical Technology (PEC-VI)	819831.1	Understand the current status and challenges of petroleum refinery worldwide and in India.
			819831.2	Apply the knowledge for refining of crude oil through fractionation.
			819831.3	Display the knowledge for controlling pollution in the petrochemical refineries.

Class	Semester	Name of the Subject	CO	Course Outcome
			819831.4	Understand the significance of unit operations and unit processes in manufacturing of chemicals.
			819831.5	Demonstrate techniques for the economical manufacturing of commercially important petrochemicals.
BE	VIII	Energy Conservation and Management (OEC-IV)	819841.1	Learn energy conservation, management and audit.
			819841.2	Understand Indian energy conservation act.
			819841.3	Understand economics of efficient energy use and energy efficient technology.
			819841.4	Accustom waste heat recovery.
			819841.5	Demonstrate energy saving techniques
BE	VIII	Process Technology and Economics Lab	819805.1	State the basic concepts of process design development and general design considerations.
			819805.2	Understand importance of unit processes and symbols of unit operations.
			819805.3	Draw the process flow sheet for the manufacturing of specific chemical products
			819805.4	Identify and thereby solve major engineering problems encountered during manufacturing
			819805.5	Perform economic analysis for process to calculate equipment cost, and profitability for
BE	VIII	Design and Simulation Lab	819806.1	Demonstrate the ability of using Chemical Engineering concepts in designing and providing computer aided solutions to various unit operations and unit processes with the help of C/C++.
			819806.2	Display performing the task with multidisciplinary teams by identifying, formulating, designing.
			819806.3	Understand professional and ethical responsibilities formally and informally show the capacity of designing to meet economical and societal requirements.
			819806.4	Understand about computer aided design along with the environmental issues and will provide solutions for green and clean technologies.
			819806.5	Exhibit the computational skills using simulation.

Class	Semester	Name of the Subject	CO	Course Outcome
BE	VIII	Project - II	819807.1	Demonstrate a sound technical knowledge of their selected project topic.
			819807.2	Undertake problem identification, formulation and solution.
			819807.3	Design engineering solutions to complex problems utilizing a systems approach.
			819807.4	Conduct an engineering project
			819807.5	Demonstrate the knowledge, skills and attitudes of a professional engineer.

Course Outcome for B.E. Civil Engineering

Class	Semester	Name of the Subject	CO	Course Outcome
FE	I	Chemistry	811101.1	Analyse microscopic chemistry in terms of atomic and molecular orbitals and intermolecular forces.
			811101.2	Distinguish the ranges of the electromagnetic spectrum used for exciting different molecular energy levels in various spectroscopic techniques
			811101.3	Rationalise periodic properties such as ionization potential, electronegativity, oxidation states and electronegativity.
			811101.4	Rationalise bulk properties & processes using thermodynamic considerations
			811101.5	List major chemical reactions that are used in the synthesis of molecules.
FE	I	Engineering Graphics	811104.1	Introduction to engineering design and its place in society
			811104.2	Exposure to the visual aspects of engineering design
			811104.3	Exposure to engineering graphics standards
			811104.4	Exposure to solid modeling.
FE	I	English	811103.1	To acquire basic proficiency in English including reading and listening
			811103.2	To demonstrate proficiency in the use of written English, including proper spelling, Grammar and punctuation.
			811103.3	To enhance their ability to use spoken words in interpersonal communication, small group interactions and public speaking Comprehension, writing and speaking skills.
			811103.4	Become accomplished technical communicators.
FE	I	Mathematics - I	811102.1	Apply differential and integral calculus. Apart from some other applications they will have a basic understanding of Beta and Gamma functions.
			811102.2	The fallouts of Rolle's Theorem that is fundamental to application of analysis to Engineering problems.
			811102.3	The tool of Fourier series for learning advanced Engineering Mathematics.

Class	Semester	Name of the Subject	CO	Course Outcome
			811102.4	To deal with functions of several variables that are essential in most branches of Engineering.The essential tool of matrices and linear algebra in a comprehensive manner.
FE	I	Chemistry Lab	811106.1	Upon successful completion of lab Course, student will be able to: The chemistry laboratory course will consist of experiments illustrating the principles of chemistry relevant to the study of science and engineering. The students will learn to:
			811106.2	Estimate rate constants of reactions from concentration of reactants/products as a function of time
			811106.3	Measure molecular/system properties such as surface tension, viscosity, conductance of solutions, redox potentials, chloride content of water, etc
			811106.4	Synthesize a small drug molecule and analyse a salt sample .
FE		Engineering Graphics Lab	811108.1	Introduction to engineering design and its place in society
			811108.2	Exposure to the visual aspects of engineering design
			811108.3	Exposure to engineering graphics standards
			811108.4	Exposure to solid modeling.
FE	I	English Lab	811107.1	Students will be sensitized towards recognition of English sound pattern.
			811107.2	The fluency in speech will be enhanced.
FE	I	Workshop Practices	811105.1	Students will be able to fabricatecomponents with their own hands.
			811105.2	Get practical knowledge of the dimensional accuracies and dimensional tolerances possible
			811105.3	with different manufacturing processes.
			811105.4	Assemble different components, they will be able to produce small devices of their interest.
FE	II	Physics	811201.1	To study Bragg's Law and introduced to the principles of lasers, types of lasers and applications

Class	Semester	Name of the Subject	CO	Course Outcome
			811201.2	Various terms related to properties of materials such as, permeability, polarization, etc.
			811201.3	Some of the basic laws related to quantum mechanics as well as magnetic and dielectric
			811201.4	properties of materials
			811201.5	Simple quantum mechanics calculations
			811201.6	Nanotechnology and their industrial applications.
FE	II	Mathematics-II	811202.1	Use mathematical tools needed in evaluating multiple integrals and their usage.
			811202.2	Apply effective mathematical tools for the solutions of differential equations that model physical processes.
			811202.3	Use tools of differentiation and integration of functions of a complex variable that are used in various techniques dealing engineering problems.
FE	II	Basic Electrical & Electronics Engineering	811203.1	Students will be able to demonstrate knowledge of circuit analysis using various basic laws and theorems of electrical circuits
C			811203.2	Students will be able to demonstrate and understand definition and relationship of various AC circuits.
			811203.3	Understand working principle of PN junction diode, Zener diode and their applications.
			811203.4	Describe different configuration of Bipolar Junction Transistor.
			811203.5	Describe different configurations of FET
			811203.6	Understand operating principle Power Electronics Devices
			811203.7	Describe use of the Basic gate and Universal gate
FE	II	Programming for Problem Solving	811204.1	To formulate simple algorithms for arithmetic and logical problems
			811204.2	Understand the fundamentals of C programming.
			811204.3	To test and execute the programs and correct syntax and logical errors
			811204.4	Choose the loops and decision making statements to solve the problem.

Class	Semester	Name of the Subject	CO	Course Outcome
			811204.5	To decompose a problem into functions and synthesize a complete program using divide and conquer approach
			811204.6	To use arrays, pointers and structures to formulate algorithms and programs
FE	II	Physics Lab	811205.1	To study Bragg's Law and introduced to the principles of lasers, types of lasers and applications
			811205.2	Various terms related to properties of materials such as, permeability, polarization, etc.
			811205.3	Some of the basic laws related to quantum mechanics as well as magnetic and dielectric
			811205.4	properties of materials
			811205.5	Simple quantum mechanics calculations
			811205.6	Nanotechnology and their industrial applications.
FE	II	Basic Electrical and Electronics Engineering Lab.	811206.1	Identify electrical and electronics components/equipments.
			811206.2	Simplify D.C. network using Superposition Theorem.
			811206.3	Simplify D.C. network using Thevenin's Theorem.
			811206.4	Learn diode V-I Characteristic
			811206.5	Understand BJJ as a switch
			811206.6	Understand LED, JFET, SCR V-I characteristics
FE	II	Programming for Problem Solving Lab	811207.1	Understand the fundamentals of C programming.
			811207.2	Choose the loops and decision making statements to solve the problem.
			811207.3	Use functions to solve the given problem.
			811207.4	Implement different Operations on arrays.
			811207.5	Understand strings and structures.
			811207.6	Understand the usage of pointers.

Class	Semester	Name of the Subject	CO	Course Outcome
SE	III	BIOLOGY	811301.1	Use current techniques and analysis methods in molecular biology and genetics.
			811301.2	Understand the current concepts in Cell Biology, Stem Cell Biology and Development.
			811301.3	Know the structure/function of the basic components of prokaryotic and eukaryotic cells including macromolecules and organelles.
			811301.4	Demonstrate proficiency with at least one instrument commonly used in biological research (microscope, etc).
			811301.5	Illustrate mechanism involved in rDNA technology and apply the different aspects of Biotechnology.
SE	III	MECHANICS	811302.1	To understand use of scalar and vector analytical techniques for analysis forces in statically determinate structures.
			811302.2	To apply fundamental concepts of kinematics and kinetics of particles to the analysis of simple practical problem and to apply basic knowledge of math and physics to solve real-world problem.
			811302.3	To understand measurement error and propagation of error in processed data.
			811302.4	To understand Newton's law of motion and basic concept of – force, momentum, work and energy principle, Impulse – Momentum principle and coefficient of restitution.
			811302.5	To Uderstand Truss Analysis and It's Forces For Design Of Members
SE	III	ENERGY SCIENCE AND ENGINEERING	811303.1	To understand the importance of energy resources.
			811303.2	To understand global energy crises and its socio- economic impact.
			811303.3	To evaluate the role of engineers in energy management.
			811303.4	To analyze and apply the concept of energy efficiency in civil engineering projects.
			811303.5	To assess the importance of alternative energy sources in civil engineering perspective and energy efficient buildings

Class	Semester	Name of the Subject	CO	Course Outcome
SE	III	SURVEYING AND GEOMATICS	811304.1	Understand the importance and scope of surveying in any engineering project.
			811304.2	To know the principles of surveying.
			811304.3	To know the types of surveying.
			811304.4	To be able to use the traditional and advanced instruments of surveing.
			811304.5	To execute a survey project.
SE	III	INTRODUCTION TO CIVIL	811305.1	To understand what constitutes Civil Engineering and to identify the various areas available to pursue and specialize within the overall field of Civil Engineering
			811305.2	To Understanding the vast interfaces this field has with the society at large
			811305.3	To do creative and innovative work in civil engineering
			811305.4	Highlighting possibilities for taking up entrepreneurial activities in this field
			811305.5	Providing a foundation for the student to launch off upon an inspired academic pursuit into this branch of engineering
SE	III	MECHANICS LAB	811306.1	To experimentally verify basic principles of mechanics.
			811306.2	To solve problems of mechanics by graphical methods
			811306.3	To get an exposure to simple machine used in civil engineering.
			811306.4	To determine simple mechanical properties of materials like coefficient of friction.
			811306.5	To be able to assess the efficiency, and velocity ratio of simple machines.
SE	III	SURVEYING AND GEOMATICS LAB	811307.1	Measurement of horizontal and vertical angle ,magnetic bearings, deflection angle by using theodolite.
			811307.2	Traverse computation- consecutive and independent coordinates.
			811307.3	Tachometric surveying- measurement of horizontal and vertical distances,
			811307.4	Tacheomatric contouring
			811307.5	Plane table survey

Class	Semester	Name of the Subject	CO	Course Outcome
SE	III	MATERIAL TESTING AND EVALUATION-I	811308.1	Know the relevant IS specifications for soils
			811308.2	Must be able to characterize variety of soils
			811308.3	Know the relevant IS specifications for flexible pavement materials.
			811308.4	Must be able to characterize variety of flexible pavement materials.
			811308.5	Must be able to do mix design
SE	IV	MATHEMATICS-III	811401.1	To solve field problems in engineering involving PDEs using Laplace Transform.
			811401.2	They will be able to formulate problems involving random variables.
			811401.3	They will be able to solve problems involving random variables.
			811401.4	They will be able to apply statistical methods for analysing experimental data.
			811401.5	To solve field problems in engineering involving ODEs using Laplace Transform.
SE	IV	COMPUTER AIDED CIVIL ENGINEERING DRAWING	811402.1	The student will be able to work with a graphic assisting software
			811402.2	student will also be able to develop a building plansoftware for a given set of specifications.
			811402.3	student will be able to develop elevation
			811402.4	Student will be able to develop a side view
			811402.5	student will be able to develop a site view and working drawing using
SE	IV	INTRODUCTION TO FLUID MECHANICS	811403.1	Understand the broad principles of fluid statics
			811403.2	Understand the broad principles of fluid kinematics
			811403.3	Understand the broad principles of dynamics
			811403.4	Understand definitions of the basic terms used in fluid mechanic
			811403.5	Understand classifications of fluid flow

Class	Semester	Name of the Subject	CO	Course Outcome
SE	IV	INTRODUCTION TO SOLID MECHANICS	811404.1	Describe the concepts and principles, understand the theory of elasticity including strain/displacement and Hooke's law relationships; and perform calculations, relative to the strength and stability of structures and mechanical components;
			811404.2	Define the characteristics and calculate the magnitude of combined stresses in individual members and complete structures; analyze solid mechanics problems using classical methods and energy methods;
			811404.3	Analyze various situations involving structural members subjected to combined stresses by application of Mohr's circle of stress; locate the shear center of thin wall beams;and
			811404.4	Calculate the deflection at any point on a beam subjected to a combination of loads
			811404.5	solve for stresses and deflections of beams under unsymmetrical loading; apply various failure criteria for general stress states at points; solve torsion problems in bars and thin walled members;
SE	IV	CIVIL ENGINEERING SOCIETAL AND GLOBAL IMPACT	811405.1	After successful completion of this course the student will be able to know The impact which Civil Engineering projects have on the Society at large and on the global arena and using resources efficiently and effectively.
			811405.2	The extent of Infrastructure, its requirements for energy and how they are met: past, present and future
			811405.3	The Sustainability of the Environment, including its Aesthetics,
			811405.4	The potentials of Civil Engineering for Employment creation and its Contribution to the GDP
			811405.5	The Built Environment and factors impacting the Quality of Life, The precautions to be taken to ensure that the above-mentioned impacts are not adverse but beneficial, Applying professional and responsible judgment and take a leadership role

Class	Semester	Name of the Subject	CO	Course Outcome
SE	IV	COMPUTER AIDED CIVIL ENGINEERING LAB	811406.1	To develop graphical skills for communicating concepts, ideas and designs of engineering products.
			811406.2	To have ability to understand another person's designs.
			811406.3	To get exposure to national standards relating to technical drawings.
			811406.4	To have practice of using Computer Aided Drafting
			811406.5	To be able of using popular software.
SE	IV	INTRODUCTION TO FLUID MECHANICS LAB	811407.1	Understand the basic instrumental techniques used in fluid mechanics.
			811407.2	Understand how to characterize fluids
			811407.3	Be able to determine basic engineering properties of fluids.
			811407.4	To know applications of fluid mechanics
			811407.5	To be able to solve numerical problems in basic fluid mechanics
SE	IV	MATERIAL TESTING AND EVALUATION-II	811408.1	Know the relevant IS specifications for soils
			811408.2	Must be able to characterize variety of soils
			811408.3	Know the relevant IS specifications for flexible pavement materials.
			811408.4	Must be able to characterize variety of flexible pavement materials.
			811408.5	Must be able to do mix design
SE	IV	ENGINEERING GEOLOGY LAB	811409.1	Site characterization and how to collect, analyze, and report geologic data using standards in engineering practice
			811409.2	The fundamentals of the engineering properties of Earth materials and fluids.
			811409.3	Rock mass characterization and the mechanics of planar rock slides and topples.

Class	Semester	Name of the Subject	CO	Course Outcome
			811409.4	Soil characterization and the Unified Soil Classification System.
			811409.5	The mechanics of soils and fluids and their influence on settlement, liquefaction, and soil slope stability.
TE	V	MECHANICS OF MATERIALS	811501.1	To know basic concepts and principles for analysis of indeterminate structures and to understand the principles of strain energy and deflection of structures.
			811501.2	To be able to analyse structures for moving loads; to be able to identify the most critical combination of load train.
			811501.3	To be able to analyze fixed and continuous beams.
			811501.4	To be able to analyze beams and frames using slope deflection method.
			811501.5	To be able to analyze beams, sway and non – sway frames with stiffness and flexibility method.
TE	V	HYDRAULIC ENGINEERING	811502.1	The student must have knowledge of laminar flow analysis.
			811502.2	The student must have knowledge of turbulent flow analysis.
			811502.3	The student must be able to analyze flow through pipes
			811502.4	Student must be able to design a pipe systeand design a pipe system.
			811502.5	The student must be able to analyze and design channel flow system.
TE	V	Geotechnical Engineering	811503.1	To introduce the students with subjects of soil mechanics, basic terms, properties and relationship between them and methods of soil investigations.
			811503.2	To appraise the student with soil classification systems.
			811503.3	To appraise students about soil compaction and consolidation of soils and mathematical treatment.
			811503.4	To introduce the students with effective stress and describe shear strength of soil, types of shear tests, principal stresses and relation between them.
			811503.5	To analyze and design different types of foundations

Class	Semester	Name of the Subject	CO	Course Outcome
TE	V	PEC I CONCRETE MATERIALS	511541.1	Know the commonly used materials in civil engineering materials and their general engineering properties.
			511541.2	Examine a material as per relevant codes of practice.
			511541.3	Select a suitable material for a specific civil engineering task.
			511541.4	Design a concrete mix.
			511541.5	Know the advancements going on in material technology and concreting.
TE	V	OEC I PROJECT MANAGEMENT TECHNIQUES	811553.1	A gradate is expected to know the advanced techniques and methods in project management that are required in civil engineering work.
			811553.2	A graduate is able to schedule the time for project using the technique of project management.
			811553.3	A graduate is expected to demonstrate and practice the basics of project management.
			811553.4	A graduate should develop skills to implement and practice the use of project management techniques for civil engineering projects.
			811553.5	The graduates are expected to plan the project by CPM and PERT.
TE	V	Hydraulic Engineering Lab	811506.1	Measure drag and lift forces on airfoil and explain their variation with angle of attack.
			811506.2	Determine friction factor and hence to develop calibration equation for pipe.
			811506.3	Explain uniform flow formulae, specific energy, specific force and hydraulic jump.
			811506.4	Explain ventriflume and its calibration for discharge measurement in open channel.
			811506.5	Measure discharge, head, input and output power for different hydraulic turbines and centrifugal pump
TE	V	Geotechnical Engineering Lab	811507.1	Determine properties of soils.
			811507.2	Carryout soil investigation
			811507.3	To draft soil testing report

Class	Semester	Name of the Subject	CO	Course Outcome
			811507.4	Design foundations for different conditions of bearing capacity and other design parameters.
			811507.5	To determine soil bearing capacity
TE	V	Disaster preparedness and planning management Lab	811508.1	Identify various types of disasters
			811508.2	Learn the disaster management techniques
			811508.3	To apply the disaster management techniques
			811508.4	Implement safety management
			811508.5	Creat public awareness regarding disaster management
TE	V	Minor Project Stage I	811509.1	Undertake problem identification, formulation and solution
			811509.2	Demonstrate a sound technical knowledge of their selected project topic.
			811509.3	Design engineering solutions to complex problems utilizing a systems approach.
			811509.4	Demonstrate the knowledge, skills and attitudes of a professional engineer for problem solving.
			811509.5	Demonstrate ability to work in team
TE	VI	Structural Engineering	811601.1	Understand various design philosophies for reinforced concrete structures including limits states of collapse, serviceability, durability, characteristics strength, characteristics load, partial safety factors for material and loads. Concept of singly and doubly reinforced beams and flange sections.
			811601.2	To be able to design one way and two way slabs and beams.
			811601.3	To be able to design various components of structures such as columns, footings Staircase
			811601.4	To know about bolted and welded connections. Analysis and design of tension members.
			811601.5	To be able to analyze concept and design of compression members, column bases and built up
TE	VI	Environmental Engineering	811602.1	Understand the importance of water quality, sanitation and health.

Class	Semester	Name of the Subject	CO	Course Outcome
			811602.2	To know the water quality parameters of significance and parameters of water pollution assessment
			811602.3	To know the methods of water treatment process, their design, operation and maintenance.
			811602.4	To know the wastewater sources, mechanism of water pollution. and self purification capacity of
			811602.5	To be able to design the wastewater treatment facilities and to do their operation and maintenance.
TE	VI	Transportation Engineering	811603.1	Understand the importance of transportation system in the development of a country, classification of roads and highway planning in India.
			811603.2	Demonstrate ability to carryout topographic survey required for the road laying.
			811603.3	Demonstrate ability to decide a road geometry depending upon the anticipatory traffic and
			811603.4	Execution of a highway project.
			811603.5	Installation, commissioning and maintenance of a advanced signalling system and maintenance of road
TE	VI	PEC II Building Construction Practices	811641.1	Know about types of building structures.
			811641.2	Various materials used in building construction.
			811641.3	Constructional features of various components of buildings.
			811641.4	Finishing and decoration aspects of buildings.
			811641.5	Execution of a construction work at site.
TE	VI	OEC II Smart City Planning	611652.1	Know the importance and scope of smart city planning.
			611652.2	Know the principles of smart city planning.
			611652.3	Know the Apply his/her knowledge for planning and designing a smart city.
			611652.4	Demonstrate ability transform a given city into smart city.
			611652.5	Assess the parameters of a smart city.

Class	Semester	Name of the Subject	CO	Course Outcome
TE	VI	Structural Engineering Lab	811606.1	Analyze various types of load acting on the building structure and internal forces developed thereof.
			811606.2	Design components of the RCC and Steel structures.
			811606.3	Demonstrate use of IS 456.
			811606.4	Demonstrate use of IS 800.
			811606.5	Demonstrate the details and drawings of the structure.
TE	VI	Environmental Engineering Lab	811607.1	Collect water and wastewater samples.
			811607.2	Preserve water and wastewater samples.
			811607.3	Examine water and wastewater samples for physical, chemical and biological parameters.
			811607.4	Interpret the results.
			811607.5	Audit the treatment plants.
TE	VI	Transportation Engineering Lab	811608.1	Student will be aware of the IS codes prevailing in the testing of road construction materials
			811608.2	Apply knowledge to the testing of common road construction materials experimentally.
			811608.3	Apply knowledge to Student will be able to design flexible and rigid pavement.
			811608.4	Demonstrate ability handle site constraints.
			811608.5	Demonstrate ability to work in the working environment.
TE	VI	Minor Project II	811609.1	Undertake problem identification, formulation and solution
			811609.2	Demonstrate a sound technical knowledge of their selected project topic.
			811609.3	Design engineering solutions to complex problems utilizing a systems approach.
			811609.4	Demonstrate the knowledge, skills and attitudes of a professional engineer for problem solving.
			811609.5	Demonstrate ability to work in team

Class	Semester	Name of the Subject	CO	Course Outcome
BE	VII	Hydrology and water resources engineering	711701.1	Demonstrate phenomena of hydrological cycles and precipitation.
			711701.2	Demonstrate soil moisture content, water requirements of crops, quality criterion, water logging etc.
			711701.3	Design hydraulic structures like different types of dams and spillways and canals.
			711701.4	Select site for construction of water retaining structure and plan a complete mega water resource development project.
			711701.5	Understand the socio – economic aspect of water resources projects, their environmental impacts and mitigation measures.
BE	VII	PEC-III ADVANCED STEEL STRUCTURAL ANALYSIS AND DESIGN	711724.1	Demonstrate ability to assess critical loads and its combinations for special RCC structures like flat slabs and combined footing and analyze and design them.
			711724.2	Demonstrate ability to assess critical loads and its combinations for special RCC structures like Cantilever Retaining wall and dome and to analyze and design them.
			711724.3	Demonstrate ability to analyze and design water tanks.
			711724.4	Understand basic concepts and principles of pre-stressing and methods used for it.
			711724.5	Demonstrate ability to analyze and design pre-stressed concrete beam.
BE	VII	PEC-IV ADVANCED WATER TREATMENT TECHNOLOGY	711733.1	Plan and Design a water treatment plant with all accessories and Erect, maintain, commission, operate and trouble shoot a water treatment plant.
			711733.2	Demonstrate and ability to describe physic – chemical process of water treatment.
			711733.3	Augment a water treatment plant for growing needs.

Class	Semester	Name of the Subject	CO	Course Outcome
			711733.4	Augment a water treatment plant for water with special needs.
			711733.5	Conduct pilot plant and bench scale research activities on water treatment process.
BE	VII	OEC III SOLID AND HAZARDOUS WASTE MANAGEMENT	711741.1	Have knowledge on the sources of Solid and Hazardous Waste along with its characteristics.
			711741.2	Design a sampling plan and characterize solid waste.
			711741.3	Design transportation network for the SWM, design disposal sites for the SWM.
			711741.4	Work out manpower requirements and economic aspects for SWM including recycling.
			711741.5	Aware about prevailing legislations in this regard.
BE	VII	HYDROLOGY AND WATER RESORECES	711705.1	Solve analytical problems pertaining to hydrology, unit hydrographs and mass flow curves.
			711705.2	Asses run of a catchment area, given the topographic characteristics and rainfall data.
			711705.3	Design a complete crop and water management plan of a region.
			711705.4	Design simple gravity dams.
			711705.5	Design diversion works.
BE	VII	CONSTRUCTION ENGINEERING AND MANAGEMENT LAB	711706.1	An idea of how mega construction projects are dealt with.
			711706.2	An understanding of modern construction practices.
			711706.3	A good idea of basic construction dynamics – various stake holders, project objectives, resources required & project economics
			711706.4	A basic ability to plan, control & monitor construction projects with respect to time cost

Class	Semester	Name of the Subject	CO	Course Outcome
			711706.5	An idea of how to optimize construction projects based on costs
BE	VII	MAJOR PROJECT STAGE -I	711707.1	Undertake problem identification, formulation and solution
			711707.2	Demonstrate a sound technical knowledge of their selected project topic.
			711707.3	Design engineering solutions to complex problems utilizing a systems approach.
			711707.4	Demonstrate the knowledge, skills and attitudes of a professional engineer for problem solving.
			711707.5	Demonstrate ability to work in team
BE	VIII	Engineering economics, Estimation and Costing	811801.1	Will attain the level of proficiency to prepare approximate as well as detailed estimate of civil engineering projects.
			811801.2	Is competent enough to calculate the amount of material, labours & machinery required to execute any civil construction projects
			811801.3	Is expected to understand the terminologies associated with valuation, trained to make bills of venders of civil construction works
			811801.4	Have an idea of economics in general viz public sector and private business
			811801.5	Be able to perform and evaluate present worth, future worth & annual worth analyses on one of more economic alternatives, be able to understand how competitive bidding works & how to submit a competitive bid proposal.
BE	VIII	PECV Advanced Steel Strcutural Analysis and Design	811821.1	Analyze and design bolted and welded connections.
			811821.2	Analyze and design beam, purlins, and castellated beams with different support conditions.
			811821.3	Analyze and design girder and trusses.
			811821.4	Analyze and design different types of steel chimneys.
			811821.5	Analyze and design different types of steel water tanks.

Class	Semester	Name of the Subject	CO	Course Outcome
BE	VIII	PEC VI INDUSTRIAL WASTE WATER ENGINEERING	811834.1	A student will be able to understand the sources and amount of wastewater generated by major industries. .
			811834.2	A student will be able to assess the quality of wastewater generated by major industries.
			811834.3	A student will be able to design facilities for treatment of industrial wastewater.
			811834.4	A student will be able to commission and operated facilities for treatment of industrial wastewater.
			811834.5	A student will be aware about the prevailing environmental legislations and practices.
BE	VIII	OEC IV BIOTECHNOLOGY FOR WASTE TREATMENT	811842.1	Select the best treatment alternative for a given wastewater.
			811842.2	Demonstrate the microbiology and biochemistry of the waste treatment process.
			811842.3	Apply basic knowledge in research and development related to biological process.
			811842.4	Demonstrate current applications of biotechnology and advances in the different areas i.e. environmental, bioremediation, bioleaching and xenobiotics etc.
			811842.5	Apply the theoretical concepts for designing the experiments for studying the metabolism of various compounds present in waste water.
BE	VIII	ENGINEERING ECONOMY, ESTIMATION AND COSTING LAB	811805.1	Attain the level of proficiency to prepare approximate as well as detailed estimate of civil engineering projects.
			811805.2	Will be competent enough to calculate the amount of material, labor & machinery required to execute any civil construction projects

Class	Semester	Name of the Subject	CO	Course Outcome
			811805.3	Will be well trained to make bills of venders of civil construction works
			811805.4	Will be able to perform and evaluate present worth of a property.
			811805.5	Will be able to assess the future worth & annual worth analyses on one of more economic alternatives.
BE	VIII	ADVANCED SURVEYING LAB	811806.1	To be able to conduct Geodetic survey in remote areas.
			811806.2	To be able to determine probable error and its determination , distribution of error to the field measurements , adjustment of a geodetic triangle.
			811806.3	To be able to identify aerial photos with respect to overlap , air base distance , tone lithology.
			811806.4	To be able to carry hydrographic survey, soundings.
			811806.5	To be able to setting out curves on roads and railways.
BE	VIII	MAJOR PROJECT STAGE II	811807.1	Demonstrate a sound technical knowledge of their selected project topic.
			811807.2	Undertake problem identification, formulation and solution.
			811807.3	Design engineering solutions to complex problems utilizing a systems approach.
			811807.4	Conduct an engineering project
			811807.5	Demonstrate the knowledge, skills and attitudes of a professional engineer.

Course Outcome for B.E. Computer Engineering

Class	Semester	Program	Name of the Subject	CO	Course Outcome
FE	I	B.E. Computer	Physics	817101.1	To study Bragg's Law and introduced to the principles of lasers, types of lasers and applications
				817101.2	Various terms related to properties of materials such as, permeability, polarization, etc.
				817101.3	Some of the basic laws related to quantum mechanics as well as magnetic and dielectric
				817101.4	properties of materials
				817101.5	Simple quantum mechanics calculations
				817101.6	Nanotechnology and their industrial applications.
FE	I	B.E. Computer	Mathematics - I	817102.1	Apply differential and integral calculus. Apart from some other applications they will have a basic understanding of Beta and Gamma functions.
				817102.2	The fallouts of Rolle's Theorem that is fundamental to application of analysis to Engineering problems.
				817102.3	The tool of Fourier series for learning advanced Engineering Mathematics.
				817102.4	To deal with functions of several variables that are essential in most branches of Engineering.The essential tool of matrices and linear algebra in a comprehensive manner.
FE	I	B.E. Computer	Basic Electrical & Electronics Engineering	817103.1	Students will be able to demonstrate knowledge of circuit analysis using various basic laws and theorems of electrical circuits
				817103.2	Students will be able to demonstrate and understand definition and relationship of various AC circuits.
				817103.3	Understand working principle of PN junction diode, Zener diode and their applications.
				817103.4	Describe different configuration of Bipolar Junction Transistor.
				817103.5	Describe different configurations of FET
				817103.6	Understand operating principle Power Electronics Devices
				817103.7	Describe use of the Basic gate and Universal gate

Class	Semester	Program	Name of the Subject	CO	Course Outcome
FE	I	B.E. Computer	Programming for Problem Solving	817104.1	To formulate simple algorithms for arithmetic and logical problems
				817104.2	Understand the fundamentals of C programming.
				817104.3	To test and execute the programs and correct syntax and logical errors
				817104.4	Choose the loops and decision making statements to solve the problem.
				817104.5	To decompose a problem into functions and synthesize a complete program using divide and conquer approach
				817104.6	To use arrays, pointers and structures to formulate algorithms and programs
FE	I	B.E. Computer	Physics Lab	817105.1	To study Bragg's Law and introduced to the principles of lasers, types of lasers and applications
				817105.2	Various terms related to properties of materials such as, permeability, polarization, etc.
				817105.3	Some of the basic laws related to quantum mechanics as well as magnetic and dielectric
				817105.4	properties of materials
				817105.5	Simple quantum mechanics calculations
				817105.6	Nanotechnology and their industrial applications.
FE	I	B.E. Computer	Basic Electrical and Electronics Engineering Lab.	817106.1	Identify electrical and electronics components/equipments.
				817106.2	Simplify D.C. network using Superposition Theorem.
				817106.3	Simplify D.C. network using Thevenin's Theorem.
				817106.4	Learn diode V-I Characteristic
				817106.5	Understand BJJ as a switch
				817106.6	Understand LED, JFET, SCR V-I characteristics
FE	I	B.E. Computer	Programming for Problem Solving Lab	817107.1	Understand the fundamentals of C programming.

Class	Semester	Program	Name of the Subject	CO	Course Outcome
				817107.2	Choose the loops and decision making statements to solve the problem.
				817107.3	Use functions to solve the given problem.
				817107.4	Implement different Operations on arrays.
				817107.5	Understand strings and structures.
				817107.6	Understand the usage of pointers.
FE	II	B.E. Computer	Chemistry	817201.1	Analyse microscopic chemistry in terms of atomic and molecular orbitals and intermolecular forces.
				817201.2	Distinguish the ranges of the electromagnetic spectrum used for exciting different molecular energy levels in various spectroscopic techniques
				817201.3	Rationalise periodic properties such as ionization potential, electronegativity, oxidation states and electronegativity.
				817201.4	Rationalise bulk properties & processes using thermodynamic considerations
				817201.5	List major chemical reactions that are used in the synthesis of molecules.
FE	II	B.E. Computer	Engineering Graphics	817203.1	Introduction to engineering design and its place in society
				817203.2	Exposure to the visual aspects of engineering design
				817203.3	Exposure to engineering graphics standards
				817203.4	Exposure to solid modeling.
FE	II	B.E. Computer	English	817204.1	To acquire basic proficiency in English including reading and listening
				817204.2	To demonstrate proficiency in the use of written English, including proper spelling, Grammar and punctuation.
				817204.3	To enhance their ability to use spoken words in interpersonal communication, small group interactions and public speaking Comprehension, writing and speaking skills.
				817204.4	Become accomplished technical communicators.
FE	II	B.E. Computer	Mathematics-II	817202.1	Use mathematical tools needed in evaluating multiple integrals and their usage.
				817202.2	Apply effective mathematical tools for the solutions of differential equations that model physical processes.

Class	Semester	Program	Name of the Subject	CO	Course Outcome
				817202.3	Use tools of differentiation and integration of functions of a complex variable that are used in various techniques dealing engineering problems.
FE	II	B.E. Computer	Chemistry Lab	817206.1	Upon successful completion of lab Course, student will be able to: The chemistry laboratory course will consist of experiments illustrating the principles of chemistry relevant to the study of science and engineering.
				817206.2	Estimate rate constants of reactions from concentration of reactants/products as a function of time
				817206.3	Measure molecular/system properties such as surface tension, viscosity, conductance of solutions, redox potentials, chloride content of water, etc
				817206.4	Synthesize a small drug molecule and analyse a salt sample .
FE	II	B.E. Computer	Engineering Graphics Lab	817207.1	Introduction to engineering design and its place in society
				817207.2	Exposure to the visual aspects of engineering design
				817207.3	Exposure to engineering graphics standards
				817207.4	Exposure to solid modeling.
FE	II	B.E. Computer	English Lab	817208.1	Students will be sensitized towards recognition of English sound pattern.
				817208.2	The fluency in speech will be enhanced.
FE	II	B.E. Computer	Workshop Practices	817205.1	Students will be able to fabricatecomponents with their own hands.
				817205.2	Get practical knowledge of the dimensional accuracies and dimensional tolerances possible
				817205.3	with different manufacturing processes.
				817205.4	Assemble different components, they will be able to produce small devices oftheir interest.
SE	III	B.E. Computer	Mathematics – III	817301.1	Solve field problems in engineering involving Ordinary differential equations using Laplace Transform.
				817301.2	Apply concept of Fourier and Z-transform to solve field problems in engineering

Class	Semester	Program	Name of the Subject	CO	Course Outcome
				817301.3	Formulate and solve problems involving random variables.
				817301.4	Apply statistical methods for analyzing experimental data.
				817301.5	Understand basic concept statistics, probability distribution and test of significance
SE	III	B.E. Computer	Signals and Systems	817302.1	Demonstrate the ability to represent signals mathematically in continuous time and discrete time, and in frequency domain.
				817302.2	Understand the use of numerical method to analyze digital signal processing.
				817302.3	Understand Discrete Fourier Transform (DFT) and properties.
				817302.4	Analyze discrete time systems using Laplace and Z – transform.
				817302.5	Basic Understanding of state space analysis of system.
SE	III	B.E. Computer	Analog Electronic Circuits	817303.1	To categorize and calculate the DC and AC parameters of BJT / FET.
				817303.2	To describe and solve the frequency analysis of BJT.
				817303.3	To decide and formulate the various classes of operation of power amplifier.
				817303.4	To predict and classify the different configurations of feedback amplifiers.
				817303.5	To identify and analyze the different open loop and close loop applications of OP-Amp.
SE	III	B.E. Computer	Discrete Mathematics	817304.1	Formulate the given logic sentence it in terms of predicates, quantifiers, and logical connectives
				817304.2	Formulate real life problems in terms of set theory concepts.
				817304.3	Analyze the solution using deductive logic and prove the solution based on logical inference for given problem
				817304.4	Describe given mathematical problem according to its algebraic structure
				817304.5	Analyze the given problem as graph networks and solve with techniques of graph theory.
SE	III	B.E. Computer	Organizational Behavior	817305.1	Explain organization behaviour
				817305.2	Define individual behavior

Class	Semester	Program	Name of the Subject	CO	Course Outcome
				817305.3	Determine group issues
				817305.4	Apply leadership styles
				817305.5	Analyze factors causing work stress
SE	III	B.E. Computer	Analog Electronic Circuits Lab	817306.1	To design and formulate the operating point parameters of BJT / FET.
				817306.2	To measure the effect of bypass capacitor in frequency response.
				817306.3	To assess the effect of positive feedback in oscillator.
				817306.4	To test OP-Amp as an integrator and differentiator.
				817306.5	To measure the performance of OP-Amp low pass/ high pass filter
SE	III	B.E. Computer	Discrete Mathematics Lab	817307.1	Solve the problem based on set theory and logical connectives.
				817307.2	Identify various number conversion techniques.
				817307.3	Apply shortest path techniques in real life.
				817307.4	Analyze minimum spanning tree using Prims and Kruskal algorithm
SE	III	B.E. Computer	Object Oriented Programming Lab	817308.1	Create class and object for various application.
				817308.2	Use the concept pointers, constructors, destructors etc. for dynamic memorymanagement techniques.
				817308.3	Apply the concept of inheritance to avoid data duplication.
				817308.4	Create and demonstrate operator overloading.
				817308.5	Implement class and function template.
SE	IV	B.E. Computer	Biology	817401.1	Describe the concepts of modern cell theories and identify the differences in eukaryotic and prokaryotic cells.
				817401.2	Explain the major groups of animal and plant kingdom.
				817401.3	Demonstrate the advanced techniques in plant and animal tissue culturing, and able to calculate the growth rate of cells through culturing.

Class	Semester	Program	Name of the Subject	CO	Course Outcome
				817401.4	Classify the microorganisms through different isolation techniques and illustrate microbial culture techniques.
				817401.5	Illustrate mechanism involved rDNA technology and apply the different aspects of Biotechnology.
SE	IV	B.E. Computer	Digital Electronics	817402.1	Develop a digital logic and apply it to solve real life problems.
				817402.2	Understand and use of K-Map and Tabular method for simplification of logical expression.
				817402.3	Analyze, design and implement combinational logic circuits
				817402.4	Analyze and implement the sequential logic circuits using flip-flops.
				817402.5	Classify registers and design of the counters.
SE	IV	B.E. Computer	Data Structure & Algorithms	817403.1	Enumerate the concepts of data and data structure
				817403.2	Analyze linear data structures
				817403.3	Analyze nonlinear data structure
				817403.4	Enumerate sorting and searching algorithms
				817403.5	Analyze space and time complexity
SE	IV	B.E. Computer	Computer Organization & Architecture	817404.1	To draw and explain internal architecture of 8086 with its register organization.
				817404.2	Explain various arithmetic and logical 8086 instructions and assembler directives.
				817404.3	Explain single bus architecture within the processor with complete execution cycle.
				817404.4	Explain various types of memories and solve numerical on cache memory design.
				817404.5	Explain and solve arithmetic operations like multiplication using booths algorithm and bit pairing method.
SE	IV	B.E. Computer	Finance & Accounting	817405.1	Understand the meaning, scope, significance, legal aspects and applications of accounting in Engineering field .

Class	Semester	Program	Name of the Subject	CO	Course Outcome
				817405.2	Understanding and use of book-keeping and the distinction of accounting with bookkeeping
				817405.3	Understand and apply Concept Double Entry System, Journal, Ledger for accounting purpose.
				817405.4	Understand both the theoretical and practical role of financial management in business corporations.
				817405.5	Exposure to primary and secondary markets.
SE	IV	B.E. Computer	Digital Electronics Lab	817406.1	Generate a logic circuit for Boolean expression using basic gates.
				817406.2	Design a simplified logic circuit using K-Map/ QM method
				817406.3	Create a higher order combinational circuit from lower order combinational circuit
				817406.4	Modify any logic circuit of any type register.
				817406.5	Deploy a counter of any modulus using flip-flops.
SE	IV	B.E. Computer	Data Structure & Algorithms Lab	817407.1	Evaluate linear data structure
				817407.2	Evaluate inter conversions of mathematical notations
				817407.3	Evaluate Tree traversals
				817407.4	Evaluate nonlinear data structure
				817407.5	Evaluate searching and sorting techniques.
SE	IV	B.E. Computer	Computer Organization & Architecture Lab	817408.1	Apply DOS/BIOS interrupts and its functions for input and output operations.
				817408.2	Identify and apply 8086 assembly language macro.
				817408.3	Understand and apply 8086 assembly language NEAR and FAR procedure
				817408.4	Apply various string matching operations.
				817408.5	Write program for BCD to HEX conversion and BCD addition
SE	IV	B.E. Computer	IT Workshop	817409.1	Discuss basics of MATLAB/Scilab open source simulation software
				817409.2	Demonstrate Mathematical operations in MATLAB /Scilab

Class	Semester	Program	Name of the Subject	CO	Course Outcome
				817409.3	Illustrate plotting operations on linear expression
				817409.4	Demonstrate relational and logical operations on matrix
				817409.5	Use of matrix manipulation operations
SE	IV	B.E. Computer	Environmental Studies	55555.1	Illustrate Natural Resources and associated problems
				55555.2	Outline Ecosystem
				55555.3	Describe Biodiversity
				55555.4	Illustrate Environmental pollution
				55555.5	Illustrate social issues that effect Environment
TE	V	B.E. Computer	Database Management Systems	517501.1	Explain the basics of Database Management System and develop the entity relationship diagram for any database application.
				517501.2	Construct the queries using Formal Relational Query Languages.
				517501.3	Construct the queries using Structured Query Language and explain the working of Function, Procedure and Triggers.
				517501.4	Identify and apply normalization methods on database, along with understanding of indexing basic concept
				517501.5	Discuss the concept of transaction, concurrency, recovery and various database system architectures.
TE	V	B.E. Computer	Software Engineering	517502.1	Define basic concepts of software engineering
				517502.2	Describe software requirements
				517502.3	Illustrate the design of software
				517502.4	Test developed software for requirements validation
				517502.5	Outline software project planning activities and schedule them for project execution
TE	V	B.E. Computer	Formal Language and Automata Theory	517503.1	Understand the basic of formal languages and automata theory.
				517503.2	Describe and transform regular expression for computation.
				517503.3	Construct/convert grammars for formal languages.

Class	Semester	Program	Name of the Subject	CO	Course Outcome
				517503.4	Interpret PDA for Context free language and regular language.
				517503.5	Design and analyze the Turing machine for formal languages.
TE	V	B.E. Computer	Artificial Intelligence (PEC-I)	517541.1	Use appropriate search algorithms for any AI problem
				517541.2	Represent a problem using first order and predicate logic
				517541.3	Provide the apt agent strategy to solve a given problem
				517541.4	Design software agents to solve a problem
				517541.5	Design applications for NLP that use Artificial Intelligence.
TE	V	B.E. Computer	Cyber Law and Ethics (OEC - I)	517553.1	To able to understand the objective and scope of IT act 2000
				517553.2	To get acquainted with the Intellectual Property issues for obtaining the copyright, patents, trademark
				517553.3	To able to get familiar with the procedure of handling the process of Physical security breach
				517553.4	To able to understand the characteristics of Cybercrime and its classification
				517553.5	To be able to classify and understand information security system with respect to threats and attacks.
TE	V	B.E. Computer	Database Management Systems Lab	817506.1	Develop a database with various constraints using SQL Data Definition Language.
				817506.2	Use DML queries to retrieve, insert, delete and update the database.
				817506.3	Apply various SQL features such as Aggregate functions, Set Operations and Views to resolve the queries.
				817506.4	Demonstrate Stored Procedure, Stored function and Trigger on a Sample Databases.
				817506.5	Develop database application using ODBC/JDBC interface to store and retrieve data from the database.
TE	V	B.E. Computer	Software Engineering Lab	817507.1	Analyze the type of UML diagrams required for proposed software system

Class	Semester	Program	Name of the Subject	CO	Course Outcome
				817507.2	Decide contents of the UML diagrams
				817507.3	Design basic and advanced structural UML modeling diagrams
				817507.4	Design basic and advanced behavioral UML modeling diagrams
				817507.5	Develop various UML models for proposed software
TE	V	B.E. Computer	Web Programming Language Lab	817508.1	Able to learn new web languages (PHP, JavaScript)
				817508.2	Make use of appropriate web scripting language for different applications
				817508.3	Install and configure web server
				817508.4	Design interactive website
				817508.5	Design and develop database web application
TE	V	B.E. Computer	Minor Project (Stage – I)	817509.1	Demonstrate a sound technical knowledge of their selected project topic.
				817509.2	Undertake problem identification, formulation and solution.
				817509.3	Design engineering solutions to complex problems utilizing a systems approach.
				817509.4	Conduct an engineering project
				817509.5	Demonstrate the knowledge, skills and attitudes of a professional engineer.
TE	VI	B.E. Computer	Operating Systems	617601.1	Discuss fundamental of OS
				617601.2	Solve process scheduling, critical section, concurrency problems.
				617601.3	Explain deadlock & memory management concept.
				617601.4	Describe file management system.
				617601.5	Identify efficient disk scheduling algorithm.
TE	VI	B.E. Computer	Computer Networks	617602.1	Explain the basics concepts of data communication and networking.
				617602.2	Solve numerical of IP addressing and describe internet protocol along with address mapping.
				617602.3	Describe error reporting and forwarding along with routing protocols.

Class	Semester	Program	Name of the Subject	CO	Course Outcome
				617602.4	Demonstrate process to process communication at transport layer using TCP and UDP.
				617602.5	Discuss network security and wireless networking concepts.
TE	VI	B.E. Computer	Design and Analysis of Algorithms	617603.1	Understand and design of basic algorithms and computer time complexity.
				617603.2	Design and analyze algorithm by Divide and conquer approach.
				617603.3	Apply backtracking and Branch-bound approach to real word problem.
				617603.4	Simulate Greedy and Dynamic programming approach.
				617603.5	Recognize basic computational types of problem
TE	VI	B.E. Computer	Neural Networks	617641.1	Analyze the differences between computer and human brain.
				617641.2	Apply learning rules to artificial neural networks.
				617641.3	Analyze various architectures of artificial neural networks.
				617641.4	Enumerate perceptron
				617641.5	Enumerate the Associative Memory
TE	VI	B.E. Computer	Project Management	617651.1	Use and explain different stages of project management
				617651.2	Make use of project planning and scheduling tools
				617651.3	Know the methods of cost estimation of project
				617651.4	Apply project risk management for controlling risk
				617651.5	Understand the procurement management for the project
TE	VI	B.E. Computer	Operating Systems Lab	817606.1	Apply process scheduling concept.
				817606.2	Explain file management & memory management concept.
				817606.3	Discuss concurrency problems.
				817606.4	Analyse the disk scheduling algorithm.
				817606.5	Describe Inter Process Communication mechanism

Class	Semester	Program	Name of the Subject	CO	Course Outcome
TE	VI	B.E. Computer	Computer Networks Lab	817607.1	Apply the concept of bit stuffing in framing.
				817607.2	Use Run Length Encoding for data compression.
				817607.3	Demonstrate client server communication using TCP and UDP Socket.
				817607.4	Develop Cryptographic algorithms.
				817607.5	Build the network scenario in network simulation tool.
TE	VI	B.E. Computer	Design and Analysis of Algorithms Lab	817608.1	Analyze and Implement divide and conquer approach.
				817608.2	Implement dynamic programming approach
				817608.3	Implement Branch and bounding approach
				817608.4	Implement backtracking approach.
				817608.5	Implement greedy algorithm approach
TE	VI	B.E. Computer	Minor Project	817609.1	Demonstrate a sound technical knowledge of their selected project topic.
				817609.2	Undertake problem identification, formulation and solution.
				817609.3	Design engineering solutions to complex problems utilizing a systems approach.
				817609.4	Conduct an engineering project
				817609.5	Demonstrate the knowledge, skills and attitudes of a professional engineer.
BE	VII	B.E. Computer	Compiler Design	717701.1	Design Lexical Analyzer
				717701.2	Design Syntax Analyzer
				717701.3	Generate Intermediate Code
				717701.4	Illustrate different storage management schemes
				717701.5	Design Code Generator
BE	VII	B.E. Computer	Machine Learning	717721.1	Recognize the characteristics of machine learning that make it useful to real-world problems.
				717721.2	Able to use regularized regression and Classification algorithms.
				717721.3	Evalute machine learning algorithms and model selection.
				717721.4	Understand scalable machine learning and machine learning for IoT.

Class	Semester	Program	Name of the Subject	CO	Course Outcome
				717721.5	Understand Deep leaning and Expert system.
BE	VII	B.E. Computer	Data Mining	717731.1	To introduce students to the basic concepts and techniques of Data Mining.
				717731.2	To develop skills of using recent data mining software for solving practical problems.
				717731.3	To gain experience of doing independent study and research.
				717731.4	To study the methodology of engineering legacy databases for data warehousing and data mining to derive business rules for decision support systems.
				717731.5	Develop and apply critical thinking, problem-solving, and decision-making skills.
BE	VII	B.E. Computer	Quantitative Reasoning and Problem Solving	717743.1	Perform arithmetic calculations on number system, HCF and LCM and age
				717743.2	Solve application problems involving Time, Distance, Speed.
				717743.3	Calculate Time Taken at varies case.
				717743.4	Calculate percentage, average and simple interest.
				717743.5	Classify data as categorical or quantitative.
BE	VII	B.E. Computer	Compiler Design Lab	717705.1	Demonstrate LEX and YACC tools.
				717705.2	Design Lexical Analyzer.
				717705.3	Design Syntax Analyzer.
				717705.4	Design Code Optimization.
				717705.5	Design Code Generator
BE	VII	B.E. Computer	Advanced Technology Lab-I	717706.1	Break down real world problems / application.
				717706.2	Demonstrate Full Stack development.
				717706.3	Design Full Stack based applications.
				717706.4	Decide tools for Full Stack development.
				717706.5	Develop Full Stack based applications.
BE	VII	B.E. Computer	Project (Stage–I)	717707.1	Demonstrate a sound technical knowledge of their selected project topic.

Class	Semester	Program	Name of the Subject	CO	Course Outcome
				717707.2	Undertake problem identification, formulation and solution.
				717707.3	Design engineering solutions to complex problems utilizing a systems approach.
				717707.4	Conduct an engineering project
				717707.5	Demonstrate the knowledge, skills and attitudes of a professional engineer.
BE	VIII	B.E. Computer	Cyber Security	817801.1	Determine the act of Cyberoffenses.
				817801.2	Determine the Cybercrime through portable devices.
				817801.3	Determine the methods used in Cybercrime
				817801.4	Determine Phishing and Identity theft
				817801.5	Describe Computer Forensics.
BE	VIII	B.E. Computer	Soft Computing (Professional Elective Course–V)	817821.1	Apply soft computing methodologies includes neural network.
				817821.2	Apply soft computing methodologies includes fuzzy logic
				817821.3	Apply soft computing methodologies includes genetic algorithm
				817821.4	Apply soft computing methodologies includes hybrid system
				817821.5	Design of certain scientific and commercial application using soft computing approach
BE	VIII	B.E. Computer	Data Analytics (Professional Elective Course – VI)	817831.1	Understand the concepts of big data
				817831.2	Understand the concepts of Data science
				817831.3	Do the data analysis
				817831.4	Apply the concepts of data visualization
				817831.5	Apply data analytics tools

Class	Semester	Program	Name of the Subject	CO	Course Outcome
BE	VIII	B.E. Computer	Logical Reasoning and Problem Solving (Open Elective Course – IV)	817843.1	Tell Analogy, Classification, perform coding and decoding on data
				817843.2	Recognize logical and philosophical reasoning.
				817843.3	Recognize logical reasoning applicable to real-life situations, solve real-life problems
				817843.4	Experience with diversity to demonstrate knowledge and sensitivity.
				817843.5	Solve application problems involving Clock, Calendar and Ratio and Proportion.
BE	VIII	B.E. Computer	Cyber Security Lab	817805.1	To describe Information Technology Act of India.
				817805.2	Describe Cyber Security
				817805.3	Demonstrate Offensive Cyber Security Tools
				817805.4	Demonstrate Defensive Cyber Security Tools
				817805.5	Demonstrate Security Testing Tools for Web Applications.
BE	VIII	B.E. Computer	Advanced Technology Lab - II	817806.1	Break down real world problems / application.
				817806.2	Demonstrate Full Stack development
				817806.3	Design Full Stack based applications
				817806.4	Decide tools for Full Stack development
				817806.5	Develop Full Stack based applications.
BE	VIII	B.E. Computer	Project	817807.1	Demonstrate a sound technical knowledge of their selected project topic.
				817807.2	Undertake problem identification, formulation and solution.
				817807.3	Design engineering solutions to complex problems utilizing a systems approach.
				817807.4	Conduct an engineering project
				817807.5	Demonstrate the knowledge, skills and attitudes of a professional engineer.

Course Outcome for B.E. Electrical Engineering

Class	Semester	Program	Name of the Subject	CO	Course Outcome
FE	I	B.E. Electrical	Physics	816101.1	To study Bragg's Law and introduced to the principles of lasers, types of lasers and applications
				816101.2	Various terms related to properties of materials such as, permeability, polarization, etc.
				816101.3	Some of the basic laws related to quantum mechanics as well as magnetic and dielectric
				816101.4	properties of materials
				816101.5	Simple quantum mechanics calculations
				816101.6	Nanotechnology and their industrial applications.
FE	I	B.E. Electrical	Mathematics - I	816102.1	Apply differential and integral calculus. Apart from some other applications they will have a basic understanding of Beta and Gamma functions.
				816102.2	The fallouts of Rolle's Theorem that is fundamental to application of analysis to Engineering problems.
				816102.3	The tool of Fourier series for learning advanced Engineering Mathematics.
				816102.4	To deal with functions of several variables that are essential in most branches of Engineering.The essential tool of matrices and linear algebra in a comprehensive manner.
FE	I	B.E. Electrical	Basic Electrical & Electronics Engineering	816103.1	Students will be able to demonstrate knowledge of circuit analysis using various basic laws and theorems of electrical circuits
				816103.2	Students will be able to demonstrate and understand definition and relationship of various AC circuits.
				816103.3	Understand working principle of PN junction diode, Zener diode and their applications.
				816103.4	Describe different configuration of Bipolar Junction Transistor.
				816103.5	Describe different configurations of FET

Class	Semester	Program	Name of the Subject	CO	Course Outcome
				816103.6	Understand operating principle Power Electronics Devices
				816103.7	Describe use of the Basic gate and Universal gate
FE	I	B.E. Electrical	Programming for Problem Solving	816104.1	To formulate simple algorithms for arithmetic and logical problems
				816104.2	Understand the fundamentals of C programming.
				816104.3	To test and execute the programs and correct syntax and logical errors
				816104.4	Choose the loops and decision making statements to solve the problem.
				816104.5	To decompose a problem into functions and synthesize a complete program using divide and conquer approach
				816104.6	To use arrays, pointers and structures to formulate algorithms and programs
FE	I	B.E. Electrical	Physics Lab	816105.1	To study Bragg's Law and introduced to the principles of lasers, types of lasers and applications
				816105.2	Various terms related to properties of materials such as, permeability, polarization, etc.
				816105.3	Some of the basic laws related to quantum mechanics as well as magnetic and dielectric
				816105.4	properties of materials
				816105.5	Simple quantum mechanics calculations
				816105.6	Nanotechnology and their industrial applications.
FE	I	B.E. Electrical	Basic Electrical and Electronics Engineering Lab.	816106.1	Identify electrical and electronics components/equipments.
				816106.2	Simplify D.C. network using Superposition Theorem.
				816106.3	Simplify D.C. network using Thevenin's Theorem.
				816106.4	Learn diode V-I Characteristic
				816106.5	Understand BJJ as a switch

Class	Semester	Program	Name of the Subject	CO	Course Outcome
				816106.6	Understand LED, JFET, SCR V-I characteristics
FE	I	B.E. Electrical	Programming for Problem Solving Lab	816107.1	Understand the fundamentals of C programming.
				816107.2	Choose the loops and decision making statements to solve the problem.
				816107.3	Use functions to solve the given problem.
				816107.4	Implement different Operations on arrays.
				816107.5	Understand strings and structures.
				816107.6	Understand the usage of pointers.
FE	II	B.E. Electrical	Chemistry	816201.1	Analyse microscopic chemistry in terms of atomic and molecular orbitals and intermolecular forces.
				816201.2	Distinguish the ranges of the electromagnetic spectrum used for exciting different molecular energy levels in various spectroscopic techniques
				816201.3	Rationalise periodic properties such as ionization potential, electronegativity, oxidation states and electronegativity.
				816201.4	Rationalise bulk properties & processes using thermodynamic considerations
				816201.5	List major chemical reactions that are used in the synthesis of molecules.
FE	II	B.E. Electrical	Engineering Graphics	816203.1	Introduction to engineering design and its place in society
				816203.2	Exposure to the visual aspects of engineering design
				816203.3	Exposure to engineering graphics standards
				816203.4	Exposure to solid modeling.
FE	II	B.E. Electrical	English	816204.1	To acquire basic proficiency in English including reading and listening
				816204.2	To demonstrate proficiency in the use of written English, including proper spelling, Grammar and punctuation.

Class	Semester	Program	Name of the Subject	CO	Course Outcome
				816204.3	To enhance their ability to use spoken words in interpersonal communication, small group interactions and public speaking Comprehension, writing and speaking skills.
				816204.4	Become accomplished technical communicators.
FE	II	B.E. Electrical	Mathematics-II	816202.1	Use mathematical tools needed in evaluating multiple integrals and their usage.
				816202.2	Apply effective mathematical tools for the solutions of differential equations that model physical processes.
				816202.3	Use tools of differentiation and integration of functions of a complex variable that are used in various techniques dealing engineering problems.
FE	II	B.E. Electrical	Chemistry Lab	816206.1	Upon successful completion of lab Course, student will be able to: The chemistry laboratory course will consist of experiments illustrating the principles of chemistry relevant to the study of science and engineering. The students will learn to:
				816206.2	Estimate rate constants of reactions from concentration of reactants/products as a function of time
				816206.3	Measure molecular/system properties such as surface tension, viscosity, conductance of solutions, redox potentials, chloride content of water, etc
				816206.4	Synthesize a small drug molecule and analyse a salt sample .
FE	II	B.E. Electrical	Engineering Graphics Lab	816207.1	Introduction to engineering design and its place in society
				816207.2	Exposure to the visual aspects of engineering design
				816207.3	Exposure to engineering graphics standards
				816207.4	Exposure to solid modeling.
FE	II	B.E. Electrical	English Lab	816208.1	Students will be sensitized towards recognition of English sound pattern.
				816208.2	The fluency in speech will be enhanced.

Class	Semester	Program	Name of the Subject	CO	Course Outcome
FE	II	B.E. Electrical	Workshop Practices	816205.1	Students will be able to fabricatecomponents with their own hands.
				816205.2	Get practical knowledge of the dimensional accuracies and dimensional tolerances possible
				816205.3	with different manufacturing processes.
				816205.4	Assemble different components, they will be able to produce small devices oftheir interest.
SE	III	B.E. Electrical	Engineering Mathematics- III	816301.1	Solve linear differential equations using Laplace Transform
				816301.2	Evolution of Fourier and Z Transforms
				816301.3	Estimate coefficient of variation between data's
				816301.4	Estimate chance of occurrences of events by various distributions
				816301.5	Testing the hypothesis for large and small samples
SE	III	B.E. Electrical	Engineering Mechanics	816302.1	Understand the use of basic concepts of Resolution and composition of forces
				816302.2	Analyze beams, truss or any engineering component by applying conditions of equilibrium
				816302.3	List advantages and disadvantages of various geometric sections used in engineering design
				816302.4	Understand the different stresses and strains occurring in components of structure
				816302.5	Calculate the deformations such as axial, normal deflections under different loading conditions.
SE	III	B.E. Electrical	Electrical Circuit Analysis	816303.1	Study of magnetic coupling and resonance.

Class	Semester	Program	Name of the Subject	CO	Course Outcome
				816303.2	Apply network theorems for the analysis of electrical circuits.
				816303.3	Obtain the transient and steady-state response of electrical circuits
				816303.4	Analyze circuits using Laplace transform.
				816303.5	Analyze two port circuit behaviors
SE	III	B.E. Electrical	Electrical Machine - I	816304.1	Apply the basic knowledge of science, mathematics and engineering for understanding the concept of magnetic circuit, electromechanical energy conversion and construction of electrical machines with complex engineering problems.
				816304.2	Understand and identify the characteristic, analysis of problems and investigation of armature reaction and commutation of DC machine .
DC				816304.3	Identify characteristic and investigating performance by conducting test on DC Motors for its application in electrical drives to meet the specified needs at different utilization sectors
				816304.4	Evaluate constant of transformer, efficiency and regulation including design of experiments, analysis and interpretation of data and also able to solve complex engineering problems
				816304.5	Understand service utility of three phase transformer and its all-day efficiency , parallel operation and recognizing the course as long life learning in professional duties.
SE	III	B.E. Electrical	Industrial Organization and Management	816305.1	Interpret various concepts of Management.
				816305.2	Understand terms related to Economics of Industrial Management
				816305.3	Illustrate different plant layouts and terms related to Operational Management
				816305.4	Describe concepts of Human Resource Management and laws related to industries.
				816305.5	Understand basic concepts of Marketing and Financial Management.

Class	Semester	Program	Name of the Subject	CO	Course Outcome
SE	III	B.E. Electrical	Electrical Circuit analysis LAB	816306.1	Apply network theorems for the analysis of electrical circuits.
				816306.2	Obtain the transient and steady-state response of electrical circuits.
				816306.3	Analyze two port circuit behaviors
				816306.4	Analyze filter circuits.
				816306.5	Analyze the frequency response of parallel circuit
SE	III	B.E. Electrical	Electrical Machine-I LAB	816307.1	Apply the basic knowledge of engineering for conducting practical to understand magnetic behaviour and emf generation in DC generator.
				816307.2	Design of experiments for DC Generators to understand and identify the characteristic, analysis of armature reaction and voltage drop.
				816307.3	Conduct speed control of DC motor and identify its application in technical subject like electrical drives as life long learning .
				816307.4	Design of experiments for testing of DC motor to understand performance characteristics and investigation of practical and theoretical data for its specific and general applications with greater sense of safety precautions.
				816307.5	Evaluate constant of transformer, efficiency and regulation analysis and interpretation of practical data and also able to solve complex engineering problems as professional responsibility.
SE	III	B.E. Electrical	Electrical Workshop LAB	816308.1	Understand various electrical symbols in electrical drawing, standard size, current ratingand type of wire.
				816308.2	Select correct size of wire, cables and measuring instruments for different applications.
				816308.3	Prepare specification , estimation, execution testing and commissioning of electrical installation.
				816308.4	Select and identify the application of substation equipments, protecting equipment and starters and control equipments

Class	Semester	Program	Name of the Subject	CO	Course Outcome
				816308.5	Familiar with the safety precautions and practiceswhile working in industrial and domestic premises.
SE	IV	B.E. Electrical	Biology	816401.1	Use current techniques and analysis methods in molecular biology and genetics.
				816401.2	Understand the current concepts in Cell Biology, Stem Cell Biology and Development.
				816401.3	Know the structure/function of the basic components of prokaryotic and eukaryotic cells including macromolecules and organelles.
				816401.4	Demonstrate proficiency with at least one instrument commonly used in biological research (microscope, etc).
				816401.5	To have knowledge on biomolecules, their importance and classifications.
SE	IV	B.E. Electrical	Electrical Engineering Materials	816402.1	Classify different electrical engineering materials and testing of various electrical engineering materials.
				816402.2	Understand the electrical and thermal characteristics of conducting, semiconducting, insulating and magnetic materials for the manufacturing of electrical machines and electronic components.
				816402.3	Understand dielectric properties of insulating materials in static and alternating fields.
				816402.4	Understand and plot the B-H curve of different magnetic materials, their suitability in manufacturing of energy efficient electrical machines
				816402.5	Recognize the materials used for solar photovoltaic systems and nanotechnology.
SE	IV	B.E. Electrical	Analog and Digital Electronics	816403.1	Apply basic knowledge of science and engineering to understand electronic devices and circuits such as rectifier, amplifiers etc.

Class	Semester	Program	Name of the Subject	CO	Course Outcome
				816403.2	Analyze the circuit for determination of circuit parameters and response of op-amp IC741 and its applications.
				816403.3	Describe the use of different integrated circuits timers, PLL and voltage regulators.
				816403.4	Illustrate the basic logic gates and various reduction techniques of digital logic circuit in detail and gain the basic concept of combinational circuits.
				816403.5	Able to design sequential circuits using excitation and state table.
SE	IV	B.E. Electrical	Electrical Machine-II	816404.1	Apply the basic knowledge of science, mathematics and engineering for understanding the concept of AC electrical machines, construction , winding arrangements and its complex engineering problems.
				816404.2	Explain the operation, voltage regulation analysis of armature reaction and parallel operation of synchronous alternator including design of experiments, analysis and interpretation of data.
				816404.3	Explain the working operation , analyse of performance characteristic of three phase induction motor and solve complex engineering problems identify its application in electrical drives to meet the specified needs at different utilization sectors as a long life learning
				816404.4	Identify salient feature and characteristic of synchronous motor as reactive power compensator in power system and complex engineering problem
				816404.5	Understand principle of operation, compare and evaluate torque speed characterise and specific need and application of single phase motor .
SE	IV	B.E. Electrical	Entrepreneurship Development	816405.1	Understand concept of entrepreneurship and learn the procedure of setting up an enterprise.
				816405.2	Understand the concepts of human resource management, marketing management,financial management, production and operation management in a new enterprise.

Class	Semester	Program	Name of the Subject	CO	Course Outcome
				816405.3	Function on multidisciplinary teams and understand the impact of engineering solutions in a global, economic, environmental, and societal context.
				816405.4	Understand the role of small scale enterprises in economic development of a country and understand the linkage between small and large scale enterprises.
				816405.5	understand the linkage between small and large scale enterprises. understand the linkage between small and large scale enterprises.understand the linkage between small and large scale enterprises.
SE	IV	B.E. Electrical	Electrical Engineering Materials LAB	816406.1	Do testing of transformer oil as per IS.
				816406.2	Understand break down mechanisms for insulating materials
				816406.3	Apply basic knowledge of science and understand the characteristic of conducting material and their applications
				816406.4	Analyze the practical; data for determination of properties of materials
				816406.5	Understand the testing of power capacitor
SE	IV	B.E. Electrical	Analog and Digital Electronics LAB	816407.1	Apply basic knowledge of science and engineering to understand electronic devices by experimenting rectifier circuits.
				816407.2	Analyze the circuit for determination of circuit parameters and response of op-amp IC741 and its applications.
				816407.3	Describe the use of timers in different modes and determine the practical times and also design the voltage regulators.
				816407.4	Illustrate the basic concept of combinational circuits through the experiments.
				816407.5	Able to design sequential circuits using excitation and state table.
SE	IV	B.E. Electrical	Electrical Machine-II LAB	816408.1	Apply the basic knowledge engineering for understanding practical concept of direct load test on alternators and its advantages and limitations.

Class	Semester	Program	Name of the Subject	CO	Course Outcome
				816408.2	Conduct tests on synchronous alternator to identify theappropriatemethod for determination of voltage regulation.
				816408.3	Demonstrate the behaviour of synchronous machine in parallel and on infinite bus to drawinformation to provide valid conclusions.
				816408.4	Direct load and indirect test on three phase induction motor for determination of performance characteristic ,analysis and interpretation of practical data for specificand general applications.
				816408.5	Conduct test on single and three phase motors determination of characteristicsand life long learning for technical subject like electrical drive,maintenance to discharge professional responsibility with sense of safety precautions.
SE	IV	B.E. Electrical	Mesurement and Instrumentation LAB	816409.1	conduct practical and able to analyze the practical data for various purposes.
				816409.2	measure various electrical quantities and circuit parameters
				816409.3	able to select the measuring instrument with proper range and type for practical uses.
				816409.4	understand methods of measurement of power and energy & calibrate various types of instruments as per IS .
				816409.5	do professional duties in technical field and able to use advance measuring instruments.
TE	V	B.E. Electrical	Power Electronics	816501.1	Understand the behavior and fundamentals of semiconductor devices operated as power switches, protection and reliability of the switches.
				816501.2	Analysis of the triggering and commutation techniques for devices and how to overcome on difficult issues of devices using special devices.

Class	Semester	Program	Name of the Subject	CO	Course Outcome
				816501.3	Able to design of single-phase and three-phase thyristor converters and Describe the role of power electronics as an enabling technology in various applications.
				816501.4	Learn the basic concepts of operation of dc-to-dc converters and dc-to-ac inverters and be able to analyze basic converter topologies for various applications such as energy conservation, renewable energy, transportation etc.
				816501.5	Illustrate the basic concepts of operation of ac voltage controllers and cycloconverters.
TE	V	B.E. Electrical	Power System -I	516502.1	Understand the concepts of power transmission, power plant terminology and importance of transmission line
				516502.2	Estimate the parameters of transmission lines in power systems.
				516502.3	Analyze the performance of short transmission line
				516502.4	Analyze the performance of medium transmission line
				516502.5	Analyze the performance of long transmission line
TE	V	B.E. Electrical	Electromagnetic Field	516503.1	To apply the basic concept of mathematics and laws of electromagnetism to solve the complex engineering problem.
				516503.2	To obtain the electric and magnetic fields for simple configurations under static conditions
				516503.3	To analyze the different conditions of conductors, dielectrics and capacitance
				516503.4	To analyze static magnetic fields
				516503.5	To analyze time varying electric and magnetic fields and apply maxwell"s equation in different form
TE	V	B.E. Electrical	Signals and Systems	516541.1	The objective of this course is to introduce the students to the various signals.

Class	Semester	Program	Name of the Subject	CO	Course Outcome
				516541.2	Study and understanding of representation of signals and systems.
				516541.3	To learn and understand different Transforms for Digital Signal Processing
				516541.4	Analysis of Discrete Time signals and systems
				516541.5	Understand and illustrate working and Construction of digital instruments like digital voltmeter, digital frequency meter and power factor meter.
TE	V	B.E. Electrical	Electronics Mesurement	516552.1	Analyze the performance characteristics of each instrument, know about various error and remedies to minimize these error
				516552.2	Understand and illustrate working and Construction of digital instruments like digital voltmeter, digital frequency meter and power factor meter.
				516552.3	Understand the operation of various signals generators and their application in electronics measurement.
				516552.4	Understand signal analyzers and its different types for signal analysis.
				516552.5	Understand the construction and working operation of Cathode ray oscilloscope with different types & application in Industries
TE	V	B.E. Electrical	Power Electronics Lab	816506.1	Understand the behavior of semiconductor devices operated as power switches and ability to design, set up, and test power electronic circuits in the laboratory
				816506.2	Describe the role of power electronics as an enabling technology in various applications such as flexible production systems, energy conservation, renewable energy, transportation etc.
				816506.3	Able to design of single-phase and three-phase thyristor converters.
				816506.4	Learn the basic concepts of operation of dc-to-dc converters and dc-to-ac inverters and be able to analyze basic converter topologies.
				816506.5	Illustrate the basic concepts of operation of ac voltage controllers and cycloconverters.

Class	Semester	Program	Name of the Subject	CO	Course Outcome
TE	V	B.E. Electrical	Power System-I LAB	816507.1	Evaluate parameters of medium and long transmission line in power systems
				816507.2	Estimation of surge impedance loading of transmission Line
				816507.3	Analysis of reactive power compensation of transmission Line
				816507.4	Analyze performance of short and medium transmission Lines
				816507.5	Analyze performance of long transmission Line
TE	V	B.E. Electrical	Electronic Design Lab	816508.1	Develop the skill to build, and troubleshoot analog circuits
				816508.2	Construct and test complex electronic circuits in the laboratory
				816508.3	Design and build analog circuits using analog and digital ICs.
				816508.4	Analyze the applications of analog ICs
				816508.5	Illustrate different applications of digital ICs
TE	V	B.E. Electrical	MP-I	816509.1	Apply knowledge of mathematics, science, and engineering to solve engineeringproblem by demonstration of prototype project.
				801659.2	Design a system, component, or process to meet desired needs within realistic constraints such as economic, environmental, social, ethical, health and safety, manufacturability, and sustainability.
				786809.3	Function on multidisciplinary teams, communicate effectively and Knowledge of contemporary issues with greater sense of management.
				771959.4	Use resources ,techniques, skills, modern engineering tools and software necessary for engineering practice.
				757109.5	Recognition of the need for, and an ability to engage in life-longand self learning.
TE	VI	B.E. Electrical	Control System	616601.1	Analyse open loop and closed-loop control systems for stability and steady-state performance

Class	Semester	Program	Name of the Subject	CO	Course Outcome
				616601.2	Design a closed-loop control system to satisfy dynamic performance specifications using frequency response, root-locus, and state-space techniques, as well as steady state error specifications
				616601.3	Compute stability of linear systems using the Routh array test and use this to generate control design constraints
				616601.4	Compute gain and phase margins from Bode diagrams and Nyquist plots and understand their implications in terms of robust stability
				616601.5	Design Lead-Lag compensators based on frequency data for an open-loop linear system
TE	VI	B.E. Electrical	Microprocessor and Microcontroller	616602.1	Apply basic electronic subject and software algorithm application for understanding Architectures assemble language of microcontroller and microprocessor
				616602.2	Develop assemble language programming and interfacing peripherals for wide application in electrical engineering
				616602.3	Develop assembly language source code for applications that use I/O ports, timer and single/multiple interrupts
				616602.4	Apply the knowledge of microprocessor and microcontroller in measurement of electrical quantities, microprocessor and microcontroller based electrical protection system
				616602.5	Do higher study in the field of automation, operation and control of power system by microprocessor and microcontroller
TE	VI	B.E. Electrical	Power System-II	616603.1	Understand the representation of synchronous machine, transmission line and power transformer to evaluate the performance of power system
				616603.2	Analyze the power system to calculate the effects of symmetrical faults on power system
				616603.3	Analyze the power system in terms of symmetrical components and sequence networks of synchronous machines, transmission line and traansformer

Class	Semester	Program	Name of the Subject	CO	Course Outcome
				616603.4	Analyze the power system to calculate the effects of unsymmetrical faults.
				616603.5	Determine the power flow for a given system
TE	VI	B.E. Electrical	Industrial Automation (PROF ELECT 2)	816641.1	Use various sensors for measurement of physical parameters
				816641.2	Aanalyze various control configurations used in process control
				816641.3	Use controller such as P, PI, PID
				816641.4	Design systems using PLC, SCADA, DDC configuration as control values for application
				816641.5	Modify, design and develop various elements of automation to suit the real time industrial applications and extend to the concepts of advanced manufacturing planning
TE	VI	B.E. Electrical	Power Plant Engineering (OPEN ELECT 2)	816651.1	Understand the characteristics of positive and negative feedback circuits.
				816651.2	Explain the difference between the frequency response of internally compensated and non-compensated op-amps and Analyze and identify linear and nonlinear applications of an Op-Amp.
				816651.3	Draw the frequency response of all active filters.
				816651.4	Understand the operations of basic comparators and converters.
				816651.5	Understand and apply the functionalities of PLL.

Class	Semester	Program	Name of the Subject	CO	Course Outcome
TE	VI	B.E. Electrical	Control System LAB	816606.1	Apply the basic knowledge of science, mathematics and engineering for understanding the concept of open loop and closed-loop control systems and to find transfer function
				816606.2	Understand and identify the synchros characteristics and synchros as an error detector
				816606.3	Understand and identify the characteristic of two phase ac servomotors and identify its application for control system applications
				816606.4	Evaluate time domain response of second order system for step input by using software
				816606.5	Evaluate stability of system by bode diagram of an open loop transfer function by using software
TE	VI	B.E. Electrical	Microprocessor and microcontroller LAB	816607.1	Know the pin configuration and memory organization of a typical microprocessor and microcontroller
				816607.2	Analyze architechture, pin diagram and instructions of microprocessor and microcontroller
				816607.3	Interpret the program for typical microprocessor in assembly language for given problem
				816607.4	Study of memory and peripheral device interfacing for application development
				816607.5	Study of on chip peripherals for automization in applications
TE	VI	B.E. Electrical	Power System-II LAB	816608.1	Evaluate reactance of synchronous machine on no load and loaded condition
				816608.2	Analyze the effects of symmetrical fault on power system
				816608.3	Analyze the effects of unsymmetrical faults on power system
				816608.4	Compute the Y-bus matrix for a given system

Class	Semester	Program	Name of the Subject	CO	Course Outcome
				816608.5	Determine the power flow for a given system
TE	VI	B.E. Electrical	MINOR PROJECT	816609.1	Apply knowledge of mathematics, science, and engineering to solve engineeringproblem by demonstration of prototype project.
				816609.2	Design a system, component, or process to meet desired needs within realistic constraints such as economic, environmental, social, ethical, health and safety, manufacturability, and sustainability.
				816609.3	Function on multidisciplinary teams, communicate effectively and Knowledge of contemporary issues with greater sense of management.
				816609.4	Use resources ,techniques, skills, modern engineering tools and software necessary for engineering practice.
				816609.5	Recognition of the need for, and an ability to engage in life-longand self learning.
BE	VII	B.E. Electrical	Electrical Drives	716701.1	Apply the knowledge of electrical engineering subjects in different application of industries like manufacturing, maintenance, operation and safety.
				716701.2	Understand different speed control methods in D.C and A.C motors using thyristors-based control schemes.
				716701.3	Understand the characteristic of load and selection of drive in industrial sectors.
				716701.4	Conduct practical and analyze data for proper selection of drive in realistic constrain of load requirement
				716701.5	Understand the impact of electrical characteristic of motor in electric traction system.
BE	VII	B.E. Electrical	Electrical Energy Conservation and Auditing	716721.1	Understand the current energy scenario and importance of energy conservation in view of social and environmental cause.

Class	Semester	Program	Name of the Subject	CO	Course Outcome
				716721.2	Apply basic knowledge of engineering to understand need of energy audit, identify methods , analyze technical and economical feasibility. Also able to summarize all possible suggestion for fruitful results.
				716721.3	Identify methods for energy management by IT tools including prediction and modeling to complex engineering problems, analyze the energy data and electric tariff for implementation of demand side management in every sector of consumer.
				716721.4	Conduct an investigation the consumption in motive , illumination, heating and cooling system for conserving electrical energy by professional and ethical way and able to solve complex engineering problems.
				716721.5	Apply appropriate techniques, resources, for analyzing performance assessment of motors. Cooling system, pumps and lighting system. Students also able to recognized the importance of financial analysis .
BE	VII	B.E. Electrical	Power System Dynamics and Control	716731.1	Know the optimal load scheduling, function & operation of load dispatch centre for economic growth of electric utilities.
				716731.2	Know the concept of automatic voltage control, their mathematical modeling, static and dynamic analysis.
				716731.3	Know the concept of frequency control, mathematical modeling, static and dynamic response of single area system.
				716731.4	Describe steady state stability of a power system
				716731.5	Describe transient stability of a power system.
BE	VII	B.E. Electrical	VLSI Design and Technology	716741.1	Understand the modeling and design concepts of digital systems domains for different combinational and sequential circuits. Also understand the concepts of data-flow description in VHDL. Identify the signal assignment statement. Recognize the levels of modeling using VHDL.

Class	Semester	Program	Name of the Subject	CO	Course Outcome
				716741.2	Understand the concepts sequential statements and how differ from concurrent statement. Also identify the basic statement of behavioral description.
				716741.3	Understand the concepts of structural description, including the binding of modules.
				716741.4	Understand the concept of describing and simulating digital systems using transistors. Also identify the basic statements of switch-level package that matches the switch-level functions.
				716741.5	Understand the function of simulator, synthesizer and PLDs. Also the concepts of states and their implementation.
BE	VII	B.E. Electrical	Electrical Drives LAB	716705.1	Apply the knowledge of electrical engineering subjects in different application of industries like manufacturing, maintenance, operation and safety.
				716705.2	Understand different speed control methods in D.C and A.C motors using thyristors based control schemes.
				716705.3	Understand the characteristic of load and selection of derive in industrial sectors.
				716705.4	Conduct practical and analyze data for proper selection of derive in realistic constrain of load requirement.
				716705.5	Discharge professional duties in industries with innovative ideas of operation and control of drives.
BE	VII	B.E. Electrical	MATLAB Application Lab	716706.1	Implement small and medium programs of varying complexity using the most commonly used features of the language
				716706.2	Employ good programming style, standards and practices during program development.
				716706.3	Solve the different numerical techniques and perform Matrix operations
				716706.4	Understand and use of MATLAB/Simulink for solving simple electrical engineering problems

Class	Semester	Program	Name of the Subject	CO	Course Outcome
				716706.5	Use modern engineering tools in MATLAB/Simulink which are useful for analyzing and designing of electrical power system
BE	VII	B.E. Electrical	PROJECT I	716707.1	Undertake problem identification formulation and solution
				716707.2	Demonstrate a sound literature survey of their selected project topic
				716707.3	Analyze and assemble the basic information to find solution of a complex engineering problem by using suitable methodology/procedure
				716707.4	Demonstrate the knowledge skills and attitudes of a professional engineer
				716707.5	Document and report the project work carried out in an appropriate format
BE	VIII	B.E. Electrical	Power System Protection	816801.1	Apply the basic knowledge of science for understanding arc generation and interruption in medium and high voltage circuit.
				816801.2	Discuss construction operation and specifications of different circuit breakers used in power system.
				816801.3	Define basic relay and their role in protection system.
				816801.4	State relay based on modern techniques and their role in protection scheme.
				816801.5	State different protection scheme used in power system.
BE	VIII	B.E. Electrical	Electric and Hybrid Vhehical	816831.1	Apply the concepts of High Voltage Engineering through laboratory experimental work and Connect the circuit to perform experiments, measure, analyze the observed data to come to a conclusion
				816831.2	Evaluate the performance of breakdown testing of various dielectrics
				816831.3	Calibrate the breakdown voltage of air using sphere-gap assembly
				816831.4	Visualize and analyze the corona effect
				816831.5	Know the breakdown condition of insulators, bushing, cables, transformer's as per Standard Specifications.
BE	VIII	B.E. Electrical	Digital Signal Processing	816841.1	Apply basic mathematics to classify and understand the signal

Class	Semester	Program	Name of the Subject	CO	Course Outcome
				816841.2	Analyse to understand the hidden information in the signal by using different transformations
				816841.3	Ability to determine the frequency, steady state and transient response of LTI system
				816841.4	To undrestand the mathematical modeling of digital filters
				816841.5	Apply basic algorithm of DSP processing in different electrical controls and applications
BE	VIII	B.E. Electrical	Flexible AC Transmission System & Power Quality	816821.1	Understand basic concept of FACTS
				816821.2	Understand basic knowledge of shunt & series compensator
				816821.3	Understand basic knowledge of combined series and shunt compensators.
				816821.4	understand the basic concept of power qaulity
				816821.5	analyze the need of different types of filters for harmonics mitigation
BE	VIII	B.E. Electrical	Power System Protection LAB	816805.1	Analyze the arc formation and arc extinction phenomenon.
				816805.2	Analyze Over current & earth fault protection scheme for alternator.
				816805.3	Explain Protection of 3 phase transformer using differential relay.
				816805.4	Explain differential protection scheme applied to transformer.
				816805.5	Demonstrate microprocessor based protection.
BE	VIII	B.E. Electrical	High Voltage Lab	816806.1	Apply the concepts of High Voltage Engineering through laboratory experimental work and Connect the circuit to perform experiments, measure, analyze the observed data to come to a conclusion
				816806.2	Evaluate the performance of breakdown testing of various dielectrics.
				816806.3	Calibrate the breakdown voltage of air using sphere-gap assembly.

Class	Semester	Program	Name of the Subject	CO	Course Outcome
				816806.4	Visualize and analyze the corona effect.
				816806.5	Understand the methods of generation and Measurement of high voltages and currents and testing of various electrical equipments
BE	VIII	B.E. Electrical	PROJECT II	816807.1	Undertake problem identification formulation and solution
				816807.2	Demonstrate a sound literature survey of their selected project topic
				816807.3	Analyze and assemble the basic information to find solution of a complex engineering problem by using suitable methodology/procedure
				816807.4	Demonstrate the knowledge skills and attitudes of a professional engineer
				816807.5	Document and report the project work carried out in an appropriate format

Course Outcome for B.E. Electronics & Telecommunication

Class	Semester	Program	Name of the Subject	CO	Course Outcome
FE	I	BE E&TC	Physics	818101.1	To study Bragg's Law and introduced to the principles of lasers, types of lasers and applications
				818101.2	Various terms related to properties of materials such as, permeability, polarization, etc.
				818101.3	Some of the basic laws related to quantum mechanics as well as magnetic and dielectric
				818101.4	properties of materials
				818101.5	Simple quantum mechanics calculations
				818101.6	Nanotechnology and their industrial applications.
FE	I	BE E&TC	Mathematics - I	818102.1	Apply differential and integral calculus. Apart from some other applications they will have a basic understanding of Beta and Gamma functions.
				818102.2	The fallouts of Rolle's Theorem that is fundamental to application of analysis to Engineering problems.
				818102.3	The tool of Fourier series for learning advanced Engineering Mathematics.
				818102.4	To deal with functions of several variables that are essential in most branches of Engineering.The essential tool of matrices and linear algebra in a comprehensive manner.
FE	I	BE E&TC	Basic Electrical & Electronics Engineering	818103.1	Students will be able to demonstrate knowledge of circuit analysis using various basic laws and theorems of electrical circuits
				818103.2	Students will be able to demonstrate and understand definition and relationship of various AC circuits.
				818103.3	Understand working principle of PN junction diode, Zener diode and their applications.

Class	Semester	Program	Name of the Subject	CO	Course Outcome
				818103.4	Describe different configuration of Bipolar Junction Transistor.
				818103.5	Describe different configurations of FET
				818103.6	Understand operating principle Power Electronics Devices
				818103.7	Describe use of the Basic gate and Universal gate
FE	I	BE E&TC	Programming for Problem Solving	818104.1	To formulate simple algorithms for arithmetic and logical problems
				818104.2	Understand the fundamentals of C programming.
				818104.3	To test and execute the programs and correct syntax and logical errors
				818104.4	Choose the loops and decision making statements to solve the problem.
				818104.5	To decompose a problem into functions and synthesize a complete program using divide and conquer approach
				818104.6	To use arrays, pointers and structures to formulate algorithms and programs
FE	I	BE E&TC	Physics Lab	818105.1	To study Bragg's Law and introduced to the principles of lasers, types of lasers and applications
				818105.2	Various terms related to properties of materials such as, permeability, polarization, etc.
				818105.3	Some of the basic laws related to quantum mechanics as well as magnetic and dielectric
				818105.4	properties of materials
				818105.5	Simple quantum mechanics calculations
				818105.6	Nanotechnology and their industrial applications.
FE	I	BE E&TC	Basic Electrical and Electronics Engineering Lab.	818106.1	Identify electrical and electronics components/equipments.
				818106.2	Simplify D.C. network using Superposition Theorem.
				818106.3	Simplify D.C. network using Thevenin's Theorem.

Class	Semester	Program	Name of the Subject	CO	Course Outcome
				818106.4	Learn diode V-I Characteristic
				818106.5	Understand BJJ as a switch
				818106.6	Understand LED, JFET, SCR V-I characteristics
FE	I	BE E&TC	Programming for Problem Solving Lab	818107.1	Understand the fundamentals of C programming.
				818107.2	Choose the loops and decision making statements to solve the problem.
				818107.3	Use functions to solve the given problem.
				818107.4	Implement different Operations on arrays.
				818107.5	Understand strings and structures.
				818107.6	Understand the usage of pointers.
FE	II	BE E&TC	Chemistry	818201.1	Analyse microscopic chemistry in terms of atomic and molecular orbitals and intermolecular forces.
				818201.2	Distinguish the ranges of the electromagnetic spectrum used for exciting different molecular energy levels in various spectroscopic techniques
				818201.3	Rationalise periodic properties such as ionization potential, electronegativity, oxidation states and electronegativity.
				818201.4	Rationalise bulk properties & processes using thermodynamic considerations
				818201.5	List major chemical reactions that are used in the synthesis of molecules.
FE	II	BE E&TC	Engineering Graphics	818203.1	Introduction to engineering design and its place in society
				818203.2	Exposure to the visual aspects of engineering design
				818203.3	Exposure to engineering graphics standards
				818203.4	Exposure to solid modeling.
FE	II	BE E&TC	English	818204.1	To acquire basic proficiency in English including reading and listening

Class	Semester	Program	Name of the Subject	CO	Course Outcome
				818204.2	To demonstrate proficiency in the use of written English, including proper spelling, Grammar and punctuation.
				818204.3	To enhance their ability to use spoken words in interpersonal communication, small group interactions and public speaking Comprehension, writing and speaking skills.
				818204.4	Become accomplished technical communicators.
FE	II	BE E&TC	Mathematics-II	818202.1	Use mathematical tools needed in evaluating multiple integrals and their usage.
				818202.2	Apply effective mathematical tools for the solutions of differential equations that model physical processes.
				818202.3	Use tools of differentiation and integration of functions of a complex variable that are used in various techniques dealing engineering problems.
FE	II	BE E&TC	Chemistry Lab	818206.1	Upon successful completion of lab Course, student will be able to: The chemistry laboratory course will consist of experiments illustrating the principles of chemistry relevant to the study of science and engineering.
				818206.2	Estimate rate constants of reactions from concentration of reactants/products as a function of time
				818206.3	Measure molecular/system properties such as surface tension, viscosity, conductance of solutions, redox potentials, chloride content of water, etc
				818206.4	Synthesize a small drug molecule and analyse a salt sample .
FE	II	BE E&TC	Engineering Graphics Lab	818207.1	Introduction to engineering design and its place in society
				818207.2	Exposure to the visual aspects of engineering design
				818207.3	Exposure to engineering graphics standards
				818207.4	Exposure to solid modeling.

Class	Semester	Program	Name of the Subject	CO	Course Outcome
FE	II	BE E&TC	English Lab	818208.1	Students will be sensitized towards recognition of English sound pattern.
				818208.2	The fluency in speech will be enhanced.
FE	II	BE E&TC	Workshop Practices	818205.1	Students will be able to fabricatecomponents with their own hands.
				818205.2	Get practical knowledge of the dimensional accuracies and dimensional tolerances possible
				818205.3	with different manufacturing processes.
				818205.4	Assemble different components, they will be able to produce small devices oftheir interest.
SE	III	BE E&TC	Mathematics – III	818301.1	Solve field problems in engineering involving Ordinary differential equations using Laplace Transform.
				818301.2	Apply concept of Fourier and Z-transform to solve field problems in engineering
				818301.3	Formulate and solve problems involving random variables.
				818301.4	Apply statistical methods for analyzing experimental data.
				818301.5	Understand basic concept statistics, probability distribution and test of significance
SE	III	BE E&TC	Electrical Machines	818302.1	Apply knowledge of 3Ø system for measurement of 3Ø power & their parameters.
DC				818302.2	Describe constructional details, principle of operation, performance, starters of DC Machines
				818302.3	Analyze different parameters of transformer & also they are familiar with V-Vconnection, Scott connection, testing of transformer.
				818302.4	Use & explain constructional details, principle of operation and working of Synchronous machines.
				818302.5	Describe fundamentals of 1Ø, 3Ø induction motor.
SE	III	BE E&TC	Solid state Devices &circuits	818303.1	Understand the principles of semiconductor Physics and to acquire basic knowledge of physical and electrical conducting properties of transistor.

Class	Semester	Program	Name of the Subject	CO	Course Outcome
				818303.2	Develop the ability to understand the working of BJT / FET amplifiers.
				818303.3	Develop the skill to build, and troubleshoot solid state circuits.
				818303.4	Understand and utilize the mathematical models of semiconductor junctions and MOS transistors for circuits and systems
				818303.5	Understand the fundamental application of solid state devices in the electronic industry
SE	III	BE E&TC	Digital System Design	818304.1	Apply knowledge for conversion of different type of code.
				818304.2	Apply simplification of logical expression using K-map upto 5 variables
				818304.3	Apply basic principles to design Combinational logic circuit.
				818304.4	Apply basic principles to design Sequential logic circuit.
				818304.5	Explain basic concept of logic family and Programmable logic device
SE	III	BE E&TC	Industrial Organisation &	818305.1	understand fundamental principle of Organization and Management
				818305.2	able to know about various organizational structures and their application in industry.
				818305.3	able get information about financial sources for setting the capital for start up.
				818305.4	able to understand the utilization of available resources like men, material and machines etc
				818305.5	understand the knowledge regarding ISO standards, Industrial acts and accident avoidance.
SE	III	BE E&TC	Programming Language Lab	818306.1	Implements and understand the concept of function overloading and operator overloading.
				818306.2	Demonstrate the use of inheritance concepts with the help of programs.
				818306.3	Understand use of arrays and pointers in C++ programming
				818306.4	Demonstrate the use of polymorphism, Binding and virtual functions.

Class	Semester	Program	Name of the Subject	CO	Course Outcome
SE	III	BE E&TC	Digital System Design Lab	818307.1	To Design and implement various combinational and sequential logic circuits.
				818307.2	To implement various sequential circuits like counter and shift registers.
				818307.3	Introduce students with programmable logic device ,FPGA etc
SE	III	BE E&TC	Electronics Devices &Circuits Lab	818308.1	Verify the working of different diodes, transistors, FET and measuring instruments. Identifying the procedure of doing the experiment.
				818308.2	Design the circuits with basic semiconductor devices (active & passive elements), measuring instruments & power supplies that serves many practical purposes
				818308.3	Design and analyze the amplifier circuits using BJT and FET and study the frequency response
				818308.4	Construct, analyze and troubleshoot the designed circuits
				818308.5	Measure and record the experimental data, analyze the results, and prepare a formal laboratory report
SE	IV	BE E&TC	Biology	818401.1	To understand the structures and characteristics or functions of basic components of prokaryotic and eukaryotic cells, especially macromolecules, membranes, and organelles.
				818401.2	To learn the basic principles of inheritance at the molecular, cellular and Organism levels.
				818401.3	To test and deepen their mastery of genetics by applying this knowledge in a variety of problem-solving situations.
				818401.4	To explain the mechanism of plant and animal tissue culturing.
				818401.5	To demonstrate the mechanism of recombinant DNA technology and its application in the field of Biotechnology.
SE	IV	BE E&TC	Network & Lines	818402.1	Understand basics electrical circuits with nodal and mesh analysis along with theorems
				818402.2	Appreciate resonance in electrical network
				818402.3	Apply Laplace Transform and determine network function.

Class	Semester	Program	Name of the Subject	CO	Course Outcome
				818402.4	Determine different network functions.
				818402.5	Appreciate the frequency domain technique and filters
SE	IV	BE E&TC	Analog & Digital Communication	818403.1	Demonstrate knowledge about fundamental principles, theories and concept of communication system
				818403.2	Use & explain different methods of analog communication.
				818403.3	Analyze the behaviour of a communication system in presence of noise
				818403.4	Explain different waveform coding techniques as well as digital modulation techniques
				818403.5	Analyze the bit error performance of signal
SE	IV	BE E&TC	Analog circuits	818404.1	Acquire basic knowledge of physical and electrical conducting properties of transistor.
				818404.2	Develop the ability to understand the design and working of BJT / FET amplifiers.
				818404.3	Design amplifier circuits using BJT s And FET's and observe the amplitude frequency and responses of common amplifier circuits
				818404.4	Illustrate the effect of negative feedback on different parameters of an Amplifier and different types of negative feedback topologies.
				818404.5	Illustrate the effect of positive feedback and able to design and working of different Oscillators using BJTS.
SE	IV	BE E&TC	Ent.Development programm	818405.1	Able to understand Entrepreneurial quality.
				818405.2	Understand the role of small scale enterprises in economic development of a country and Understand the linkage between small and large scale enterprises
				818405.3	Develop advanced knowledge on how to assess business opportunities to overcome failures.
				818405.4	Student can effectively combine understanding of technology and entrepreneurship in a cross- disciplinary fashion to identify and develop attractive opportunities within your field of experience.

Class	Semester	Program	Name of the Subject	CO	Course Outcome
				818405.5	Understand the concept of human resource management, Marketing management, financial management, Production and Operation management in a new enterprise.
SE	IV	BE E&TC	Electronics workshop	818406.1	Understand basics electrical circuits with nodal and mesh analysis.
				818406.2	Appreciate electrical network theorems.
				818406.3	Apply Laplace Transform for steady state and transient analysis.
				818406.4	Determine different network functions.
				818406.5	Appreciate the frequency domain techniques.
SE	IV	BE E&TC	Analog & Digital Communication Lab	818407.1	Describe different analog modulation schemes.
				818407.2	Analyze the behavior of a communication system in presence of noise.
				818407.3	Use & explain waveform coding techniques.
				818407.4	Describe different line coding.
				818407.5	Analyze system performance of digital modulation systems
SE	IV	BE E&TC	Anolog Circuits Lab	818408.1	Acquire basic knowledge of physical and electrical conducting properties of transistor.
				818408.2	Develop the ability to understand the design and working of BJT / FET amplifiers.
				818408.3	To design amplifier circuits using BJT s And FET's and observe the ample & freq. responses of CE ckt
				818408.4	Observe the effect of - ve f/b on diff. parameters of an Amplifier and differenttypes of - ve f/b topology
				818408.5	Observe the effect of positive feedback and able to design and working of different Oscillators
SE	IV	BE E&TC	Electronics network Lab	818409.1	Understand basics electrical circuits with nodal and mesh analysis.
				818409.2	Appreciate electrical network theorems.
				818409.3	Apply Laplace Transform for steady state and transient analysis.

Class	Semester	Program	Name of the Subject	CO	Course Outcome
				818409.4	Determine different network functions.
				818409.5	Appreciate the frequency domain techniques.
TE	V	BE E&TC	Microcontrollers	818501.1	To introduce students with the architecture and operation of typical microprocessors and Microcontrollers.
				818501.2	To familiarize the students with the programming and interfacing of microcontrollers.
				818501.3	Provide background knowledge and core expertise in microcontroller.
				818501.4	To understand the importance of different peripheral devices & their interfacing to 8051.
				818501.5	Provide strong foundation for designing real world applications using microcontrollers.
TE	V	BE E&TC	Electromagnetic Waves	818502.1	To apply fundamental knowledge to learn the basic laws of electromagnetism
				818502.2	To analyze the electric and magnetic fields for simple configurations under static
				818502.3	To analyze time varying electric and magnetic fields.
				818502.4	To describe the Maxwell's equation in different forms and different media
				818502.5	To describe the propagation of EM waves.
TE	V	BE E&TC	Signals & System	818503.1	Students will describe the mathematical concepts of signal representation and its analysis
				818503.2	Students will analyze the signals and systems using fourier domain analysis
				818503.3	Students will apply the knowledge of Laplace transformation concept to analyze signal
				818503.4	Students will able to understand the use of Z-transform
				818503.5	Students will able to apply the knowledge of state space analysis and real time applications in day to day life

Class	Semester	Program	Name of the Subject	CO	Course Outcome
TE	V	BE E&TC	(PEC - I) Power Electronics	818541.1	Build and test circuits using power devices such as SCR
				818541.2	Analyse and design controlled rectifier, DC to DC converters, DC to AC inverters,
				818541.3	Learn how to analyze these inverters and some basic applications.
				818541.4	Apply the knowledge, to design the SMPS and UPS.
				818541.5	To describe the application of power electronics in day to day life.
TE	V	BE E&TC	Biomedical Instrumentation (OEC - I)	818551.1	Describe the importance of biomedical measurement in patient monitoring system.
				818551.2	Describe the application of the electronic systems in medical applications
				818551.3	Able to interpret the signals like ECG, EMG and EEG.
				818551.4	Apply the fundamental knowledge for measurement of blood pressure, body temperature And cardiac parameter
				818551.5	Describe the applications of modern imaging system like x-ray and ultrasound imaging
TE	V	BE E&TC	Microcontrollers Lab	818506.1	Understand Architecture, pins diagram, instruction and interfacing of microcontroller.
				818506.2	Learn compiling and downloading of program.
				818506.3	Interpret the program for 8051 in assembly language for given problem.
				818506.4	Describe the iteration, loop behavior implementation in the program for 8051.
				818506.5	Interface I/O devices, memory to 8051 microcontroller.
TE	V	BE E&TC	Signals & System Lab	818507.1	Apply the mathematical description and representation of continuous time and discrete time signals
				818507.2	Analyze the spectral characteristics of signals using Fourier analysis
				818507.3	Analyze the systems using Laplace transform and Z-transform.
				818507.4	Apply the fundamental knowledge for sampling and quantization of signal.

Class	Semester	Program	Name of the Subject	CO	Course Outcome
				818507.5	Understand the use of state space analysis.
TE	V	BE E&TC	Power Devices& Circuits Lab	818508.1	Design SCR firing circuit.
				818508.2	Understand the concept of power conversion AC to DC, DC to DC etc.
				818508.3	Measure the response of single phase and three phase supply.
				818508.4	Design different types of Controller.
				818508.5	Describe the 1-φ Half and full controlled Bridge rectifier with R and RL Load
TE	V	BE E&TC	Minor Project (Stage–I)	818509.1	Demonstrate a sound technical knowledge of their selected project topic.
				818509.2	Undertake problem identification, formulation and solution.
				818509.3	Design engineering solutions to complex problems utilizing a systems approach.
				818509.4	Conduct an engineering project
				818509.4	Demonstrate the knowledge, skills and attitudes of a professional engineer.
TE	VI	BE E&TC	control system	818601.1	Describe the fundamental concept and principle of feedback control systems
				818601.2	Analyze different transfer function methods
				818601.3	To gain knowledge regarding timedomain analysis and stability of control systems
				818601.4	Crete ability among the students to analyze control systems using root locus and frequence domain methods
				818601.5	To develop ability among the students regardng the concept of state space analysis and different controllers
TE	VI	BE E&TC	Electronics Measurement	818602.1	Explain the principle and operation for analog instruments, like LCR Q` meter, Vector voltmeter, impedance meter
				818602.2	Understand the principle and operation of Digital Instruments and its working.
				818602.3	Demonstrate operation and application of Signal generator & Signal Analyzers.
				818602.4	Demonstrate the detail study of voltage indicating device CRO and its applications.

Class	Semester	Program	Name of the Subject	CO	Course Outcome
				818602.5	Understand the working of different types of data acquisition system.
TE	VI	BE E&TC	Electronics Design	818603.1	Design and implement power supply.
				818603.2	Design and implement small signal amplifiers.
				818603.3	Design various power amplifiers and tuned amplifier.
				818603.4	Design of oscillators and wave shaping circuits for various practical applications.
				818603.5	Design of various analog integrated circuits using analog IC
TE	VI	BE E&TC	Professional Elective_II CMOS Design	818641.1	Understand the basic theory of MOS transistors..
				818641.2	Understand the basic steps of fabrication.
				818641.3	Analyze Combinational Circuit using CMOS.
				818641.4	Develop Sequential Circuit using CMOS
				818641.5	Acquire knowledge to Design of Data Processing Elements using VHDL.
TE	VI	BE E&TC	Open Elective Course – II Wireless Sensor Networks	818651.1	Describe the sensor network, sensor networks
				818651.2	Analyse the Localization and Synchronization
				818651.3	Describe the MAC layer issues
				818651.4	Describe the Network layer issues and protocols
				818651.5	Describe the day to day life application of wireless network.
TE	VI	BE E&TC	Electronis Design Lab	818606.1	Acquire basic knowledge to design, implement and troubleshoot analog circuits.
				818606.2	Develop the ability to design power supply and small signal amplifiers
				818606.3	Able to design and implement oscillators and wave shaping circuits
				818606.4	Able to design and test the analog filters.

Class	Semester	Program	Name of the Subject	CO	Course Outcome
				818606.5	Able to design and fabricate the circuit on PCB.
TE	VI	BE E&TC	Electronis Measurement Lab	818607.1	Students will understand fundamental principle of digital measurement.
				818607.2	Student will learn measurement of RMS signal amplitude, frequency and time on CRO.
				818607.3	Students will learn the signal analysis using harmonic analyzer and spectrum analyzer.
				818607.4	Student will gain knowledge about measurement with digital instrument.
				818607.5	
TE	VI	BE E&TC	Control system Lab	818608.1	Demonstrate knowledge about fundamental principles of synchronous motor
				818608.2	To understand the concept of PID Controller
				818608.3	Demonstrate knowledge about fundamental principles of stepper motor
				818608.4	To understand the concept of transient and unit step response
				818608.5	Able to understand the concept of stability by using Bode and Nyquiest plot
TE	VI	BE E&TC	Minor Project	818609.1	Demonstrate a sound technical knowledge of their selected project topic.
				818609.2	Undertake problem identification, formulation and solution.
				818609.3	Design engineering solutions to complex problems utilizing a systems approach.
				818609.4	Conduct an engineering project
				818609.5	Demonstrate the knowledge, skills and attitudes of a professional engineer.
BE	VII	BE E&TC	Digital Signal Processing	718701	Study of element of Discrete time signal and system , Linear convolution, Causality and Correlation concept understanding
				718701.1	Basic understanding of Z-Transform and inverse S-Transform, ROC and their properties.

Class	Semester	Program	Name of the Subject	CO	Course Outcome
				718701.2	Study of Fourier Transform of Discrete time signal and system, Fast Fourier Transform Algorithm understanding
				718701.3	Study of Design and Realization of Digital Filters.
				718701.4	Understanding of DSP Processors and their application.
BE	VII	BE E&TC	Professional Elective III_ Fiber Optics Commnication	718721.1	Able to know the fundamentals of Light theory and its application in optical communication.
				718721.2	Able to know the construction of various optical fiber and causes of signal degradation in fiber
				718721.3	Experience with the Knowledge of working of various optical sources and optical detectors.
				718721.4	Able to know about Optical link design for fiber optics.
				718721.5	Develop the knowledge on Optical Switching and networking technology.
BE	VII	BE E&TC	Professional Elective IV_satellite Commnication	718731.1	Describe the basic concepts and applications of satellite systems
				718731.2	Analyze, test and use various link budget, power budget.
				718731.3	Describe the concept of 2G,3G,4G and 5G system.
				718731.4	Apply the concept for measurement of various parameters of C/N ratio.
				718731.5	To describe the modern trends in satellite communication engineering.
BE	VII	BE E&TC	Open Elective Course _III Artificial Intelligence & Machine Learning	718741.1	Use appropriate search algorithms for any AI problem
				718741.2	Apply basic concept to describe neural network.
				718741.3	Apply basic knowledge to describe concept of Fuzzy logic.

Class	Semester	Program	Name of the Subject	CO	Course Outcome
				718741.4	Recognize the characteristics of machine learning that make it useful to real-world problems.
				718741.5	Able to use regularized regression and Classification algorithms.
BE	VII	BE E&TC	Communication Lab I	718705.1	Able to know the fundamentals, advantages and advances in optical communication system.
				718705.2	Familiarize with types, basic properties and transmission characteristic of optical fibers.
				718705.3	Experience with the Knowledge of working of optical transmitter and the receiver with analog and digital data transmission.
				718705.4	Able to know various losses in optical communication and reduce the losses.
				718705.5	
BE	VII	BE E&TC	Digital Signal Processing Lab	718706.1	Able to understand Analog signal and digital signal in discrete form using MATLAB
				718706.2	Understand different operation on sine, cos, step, ramp, impulse etc
				718706.3	Able to perform convolution operation
				718706.4	Able to perform DFT and IDFT operation
				718706.5	Able to understand FFT and IFFT signal operation
BE	VII	BE E&TC	Project (Stage – I)	718707.1	Demonstrate a sound technical knowledge of their selected project topic.
				718707.2	Undertake problem identification, formulation and solution.
				718707.3	Design engineering solutions to complex problems utilizing a systems approach.
				718707.4	Conduct an engineering project
				718707.5	Demonstrate the knowledge, skills and attitudes of a professional engineer.
BE	VIII	BE E&TC	Computer Network	818801.1	Describe the basic concepts of Computer Network systems.
				818801.2	Analyze various types of noisy protocols.
				818801.3	Describe the concept of circuit switching and packet switching.

Class	Semester	Program	Name of the Subject	CO	Course Outcome
				818801.4	Apply the concept for Congestion control and techniques to improve quality of service.
				818801.5	To describe the modern trends in Network Security and Public Key Algorithm.
BE	VIII	BE E&TC	Professional Elective Course – V Microwave Theory & Techniques	818821.1	Describe the basic concepts and applications of microwave systems.
				818821.2	Analyze, test and use various passive microwave components for different applications.
				818821.3	Describe the concept of microwave active tubes.
				818821.4	Apply the concept for measurement of various parameters of microwave system.
				818821.5	To describe the modern trends in microwave engineering.
BE	VIII	BE E&TC	Professional Elective Course – VI Embedded system	818831.1	Distinguish real-time embedded systems from other systems.
				818831.2	Understand the ARM processor fundamentals.
				818831.3	Design Real World Interfacing with ARM7 Based Microcontroller
				818831.4	Evaluate the need for real-time operating system and real-time algorithm for task scheduling.
				818831.5	Understand the IoT and its application design
BE	VIII	BE E&TC	Open Elective Course – IV Automotive Electronics & Electric Vehicle	818841.1	Describe the basic concepts and applications of varioussensors.
				818841.2	Analyze, test and use various types of test benches for electric vehicles.

Class	Semester	Program	Name of the Subject	CO	Course Outcome
				818841.3	Describe the concept of CI & PIengines.
				818841.4	Apply the concept for measurement of various parametersof vehicles.
				818841.5	To describe the modern trends in different smart electronically controlled hybrid vehicles.
BE	VIII	BE E&TC	Communication Lab _II	818805.1	Describe the basic concept of Microwave tubes
				818805.2	Describe the basic concept of microwave passive components.
				818805.3	Able to analyze the various parameters in microwave measurement.
				818805.4	Able to describe the working of various microwave antenna
				818805.5	Describe the basic of microwave Intergraded Circuits
BE	VIII	BE E&TC	Computer Network Lab	818806.1	Independently understand basic computer network technology.
				818806.2	Understand and explain Data Communications System and its components
				818806.3	Identify the different types of network topologies and protocols
				818806.4	Enumerate the layers of the OSI model and TCP/IP. Explain the function(s) of each layer.
				818806.5	Identify the different types of network devices and their functions within a network
BE	VIII	BE E&TC	Project	818807.1	Demonstrate a sound technical knowledge of their selected project topic.
				818807.2	Undertake problem identification, formulation and solution.
				818807.3	Design engineering solutions to complex problems utilizing a systems approach.
				818807.4	Conduct an engineering project
				818807.5	Demonstrate the knowledge, skills and attitudes of a professional engineer.

Course Outcome for B.E. Information Technology

Class	Semester	Name of the Subject	CO	Course Outcome
FE	I	Physics	822101.1	To study Bragg's Law and introduced to the principles of lasers, types of lasers and applications
			822101.2	Various terms related to properties of materials such as, permeability, polarization, etc.
			822101.3	Some of the basic laws related to quantum mechanics as well as magnetic and dielectric
			822101.4	properties of materials
			822101.5	Simple quantum mechanics calculations
			822101.6	Nanotechnology and their industrial applications.
FE	I	Mathematics - I	822102.1	Apply differential and integral calculus. Apart from some other applications they will have a basic understanding of Beta and Gamma functions.
			822102.2	The fallouts of Rolle's Theorem that is fundamental to application of analysis to Engineering problems.
			822102.3	The tool of Fourier series for learning advanced Engineering Mathematics.
			822102.4	To deal with functions of several variables that are essential in most branches of Engineering.The essential tool of matrices and linear algebra in a comprehensive manner.
FE	I	Basic Electrical & Electronics Engineering	822103.1	Students will be able to demonstrate knowledge of circuit analysis using various basic laws and theorems of electrical circuits
			822103.2	Students will be able to demonstrate and understand definition and relationship of various AC circuits.
			822103.3	Understand working principle of PN junction diode, Zener diode and their applications.
			822103.4	Describe different configuration of Bipolar Junction Transistor.
			822103.5	Describe different configurations of FET
			822103.6	Understand operating principle Power Electronics Devices

Class	Semester	Name of the Subject	CO	Course Outcome
			822103.7	Describe use of the Basic gate and Universal gate
FE	I	Programming for Problem Solving	822104.1	To formulate simple algorithms for arithmetic and logical problems
			822104.2	Understand the fundamentals of C programming.
			822104.3	To test and execute the programs and correct syntax and logical errors
			822104.4	Choose the loops and decision making statements to solve the problem.
			822104.5	To decompose a problem into functions and synthesize a complete program using divide and conquer approach
			822104.6	To use arrays, pointers and structures to formulate algorithms and programs
FE	I	Physics Lab	822105.1	To study Bragg's Law and introduced to the principles of lasers, types of lasers and applications
			822105.2	Various terms related to properties of materials such as, permeability, polarization, etc.
			822105.3	Some of the basic laws related to quantum mechanics as well as magnetic and dielectric
			822105.4	properties of materials
			822105.5	Simple quantum mechanics calculations
			822105.6	Nanotechnology and their industrial applications.
FE	I	Basic Electrical and Electronics Engineering Lab.	822106.1	Identify electrical and electronics components/equipments.
			822106.2	Simplify D.C. network using Superposition Theorem.
			822106.3	Simplify D.C. network using Thevenin's Theorem.
			822106.4	Learn diode V-I Characteristic
			822106.5	Understand BJJ as a switch
			822106.6	Understand LED, JFET, SCR V-I characteristics

Class	Semester	Name of the Subject	CO	Course Outcome
FE-IT	I	Programming for Problem Solving Lab	822107.1	Understand the fundamentals of C programming.
			822107.2	Choose the loops and decision making statements to solve the problem.
			822107.3	Use functions to solve the given problem.
			822107.4	Implement different Operations on arrays.
			822107.5	Understand strings and structures.
			822107.6	Understand the usage of pointers.
FE	II	Chemistry	822201.1	Analyse microscopic chemistry in terms of atomic and molecular orbitals and intermolecular forces.
			822201.2	Distinguish the ranges of the electromagnetic spectrum used for exciting different molecular energy levels in various spectroscopic techniques
			822201.3	Rationalise periodic properties such as ionization potential, electronegativity, oxidation states and electronegativity.
			822201.4	Rationalise bulk properties & processes using thermodynamic considerations
			822201.5	List major chemical reactions that are used in the synthesis of molecules.
FE	II	Engineering Graphics	822203.1	Introduction to engineering design and its place in society
			822203.2	Exposure to the visual aspects of engineering design
			822203.3	Exposure to engineering graphics standards
			822203.4	Exposure to solid modeling.
FE	II	English	822204.1	To acquire basic proficiency in English including reading and listening
			822204.2	To demonstrate proficiency in the use of written English, including proper spelling, Grammar and punctuation.
			822204.3	To enhance their ability to use spoken words in interpersonal communication, small group interactions and public speaking Comprehension, writing and speaking skills.
			822204.4	Become accomplished technical communicators.
FE	II	Mathematics-II	822202.1	Use mathematical tools needed in evaluating multiple integrals and their usage.

Class	Semester	Name of the Subject	CO	Course Outcome
			822202.2	Apply effective mathematical tools for the solutions of differential equations that model physical processes.
			822202.3	Use tools of differentiation and integration of functions of a complex variable that are used in various techniques dealing engineering problems.
FE	II	Chemistry Lab	822206.1	Upon successful completion of lab Course, student will be able to: The chemistry laboratory course will consist of experiments illustrating the principles of chemistry relevant to the study of science and engineering. The students will learn to:
			822206.2	Estimate rate constants of reactions from concentration of reactants/products as a function of time
			822206.3	Measure molecular/system properties such as surface tension, viscosity, conductance of solutions, redox potentials, chloride content of water, etc
			822206.4	Synthesize a small drug molecule and analyse a salt sample .
FE	II	Engineering Graphics Lab	822207.1	Introduction to engineering design and its place in society
			822207.2	Exposure to the visual aspects of engineering design
			822207.3	Exposure to engineering graphics standards
			822207.4	Exposure to solid modeling.
FE	II	English Lab	822208.1	Students will be sensitized towards recognition of English sound pattern.
			822208.2	The fluency in speech will be enhanced.
FE	II	Workshop Practices	822205.1	Students will be able to fabricatecomponents with their own hands.
			822205.2	Get practical knowledge of the dimensional accuracies and dimensional tolerances possible
			822205.3	with different manufacturing processes.
			822205.4	Assemble different components, they will be able to produce small devices oftheir interest.

Class	Semester	Name of the Subject	CO	Course Outcome
SE	III	Mathematics – III	822301.1	Solve field problems in engineering involving Ordinary differential equations using Laplace Transform.
			822301.2	Apply concept of Fourier and Z-transform to solve field problems in engineering
			822301.3	Formulate and solve problems involving random variables.
			822301.4	Apply statistical methods for analyzing experimental data.
			822301.5	Understand basic concept statistics, probability distribution and test of significance
SE	III	Signals and Systems	822302.1	Demonstrate the ability to represent signals mathematically in continuous time and discrete time, and in frequency domain.
			822302.2	Understand the use of numerical method to analyze digital signal processing.
			822302.3	Understand Discrete Fourier Transform (DFT) and properties.
			822302.4	Analyze discrete time systems using Laplace and Z – transform.
			822302.5	Basic Understanding of state space analysis of system.
SE	III	Analog Electronic Circuits	822303.1	To categorize and calculate the DC and AC parameters of BJT / FET.
			822303.2	To describe and solve the frequency analysis of BJT.
			822303.3	To decide and formulate the various classes of operation of power amplifier.
			822303.4	To predict and classify the different configurations of feedback amplifiers.
			822303.5	To identify and analyze the different open loop and close loop applications of OP-Amp.
SE	III	Discrete Mathematics	822304.1	Formulate the given logic sentence it in terms of predicates, quantifiers, and logical connectives
			822304.2	Formulate real life problems in terms of set theory concepts.
			822304.3	Analyze the solution using deductive logic and prove the solution based on logical inference for given problem
			822304.4	Describe given mathematical problem according to its algebraic structure
			822304.5	Analyze the given problem as graph networks and solve with techniques of graph theory.
SE	III	Organizational Behavior	822305.1	Explain organizationbehaviour
			822305.2	Define individual behavior

Class	Semester	Name of the Subject	CO	Course Outcome
			822305.3	Determine group issues
			822305.4	Apply leadership styles
			822305.5	Analyze factors causing work stress
SE	III	Analog Electronic Circuits Lab	822306.1	To design and formulate the operating point parameters of BJT / FET.
			822306.2	To measure the effect of bypass capacitor in frequency response.
			822306.3	To assess the effect of positive feedback in oscillator.
			822306.4	To test OP-Amp as an integrator and differentiator.
			822306.5	To measure the performance of OP-Amp low pass/ high pass filter
SE	III	Discrete Mathematics Lab	822307.1	Solve the problem based on set theory and logical connectives.
			822307.2	Identify various number conversion techniques.
			822307.3	Apply shortest path techniques in real life.
			822307.4	Analyze minimum spanning tree using Prims and Kruskal algorithm
			822307.5	
SE	III	Object Oriented Programming Lab	822308.1	Create class and object for various application.
			822308.2	Use the concept pointers, constructors, destructors etc. for dynamic memorymanagement techniques.
			822308.3	Apply the concept of inheritance to avoid data duplication.
			822308.4	Create and demonstrate operator overloading.
			822308.5	Implement class and function template.
SE	IV	Biology	822401.1	Describe the concepts of modern cell theories and identify the differences in eukaryotic and prokaryotic cells.
			822401.2	Explain the major groups of animal and plant kingdom.
			822401.3	Demonstrate the advanced techniques in plant and animal tissue culturing, and able to calculate the growth rate of cells through culturing.

Class	Semester	Name of the Subject	CO	Course Outcome
			822401.4	Classify the microorganisms through different isolation techniques and illustrate microbial culture techniques.
			822401.5	Illustrate mechanism involved rDNA technology and apply the different aspects of Biotechnology.
SE	IV	Digital Electronics	822402.1	Develop a digital logic and apply it to solve real life problems.
			822402.2	Understand and use of K-Map and Tabular method for simplification of logical expression.
			822402.3	Analyze, design and implement combinational logic circuits
			822402.4	Analyze and implement the sequential logic circuits using flip-flops.
			822402.5	Classify registers and design of the counters.
SE	IV	Data Structure & Algorithms	822403.1	Enumerate the concepts of data and data structure
			822403.2	Analyze linear data structures
			822403.3	Analyze nonlinear data structure
			822403.4	Enumerate sorting and searching algorithms
			822403.5	Analyze space and time complexity
SE	IV	Computer Organization & Architecture	822404.1	To draw and explain internal architecture of 8086 with its register organization.
			822404.2	Explain various arithmetic and logical 8086 instructions and assembler directives.
			822404.3	Explain single bus architecture within the processor with complete execution cycle.
			822404.4	Explain various types of memories and solve numerical on cache memory design.
			822404.5	Explain and solve arithmetic operations like multiplication using booths algorithm and bit pairing method.
SE	IV	Finance & Accounting	822405.1	Understand the meaning, scope, significance, legal aspects and applications of accounting in Engineering field .
			822405.2	Understanding and use of book-keeping and the distinction of accounting with bookkeeping
			822405.3	Understand and apply Concept Double Entry System, Journal, Ledger for accounting purpose.

Class	Semester	Name of the Subject	CO	Course Outcome
			822405.4	Understand both the theoretical and practical role of financial management in business corporations.
			822405.5	Exposure to primary and secondary markets.
SE	IV	Digital Electronics Lab	822406.1	Generate a logic circuit for Boolean expression using basic gates.
			822406.2	Design a simplified logic circuit using K-Map/ QM method
			822406.3	Create a higher order combinational circuit from lower order combinational circuit
			822406.4	Modify any logic circuit of any type register.
			822406.5	Deploy a counter of any modulus using flip-flops.
SE	IV	Data Structure & Algorithms Lab	822407.1	Evaluate linear data structure
			822407.2	Evaluate inter conversions of mathematical notations
			822407.3	Evaluate Tree traversals
			822407.4	Evaluate nonlinear data structure
			822407.5	Evaluate searching and sorting techniques.
SE	IV	Computer Organization & Architecture Lab	822408.1	Apply DOS/BIOS interrupts and its functions for input and output operations.
			822408.2	Identify and apply 8086 assembly language macro.
			822408.3	Understand and apply 8086 assembly language NEAR and FAR procedure
			822408.4	Apply various string matching operations.
			822408.5	Write program for BCD to HEX conversion and BCD addition
SE	IV	IT Workshop	822409.1	Discuss basics of MATLAB/Scilab open source simulation software
			822409.2	Demonstrate Mathematical operations in MATLAB /Scilab
			822409.3	Illustrate plotting operations on linear expression
			822409.4	Demonstrate relational and logical operations on matrix
			822409.5	Use of matrix manipulation operations

Class	Semester	Name of the Subject	CO	Course Outcome
SE	IV	Environmental Studies	85555.1	Illustrate Natural Resources and associated problems
			85555.2	Outline Ecosystem
			85555.3	Describe Biodiversity
			85555.4	Illustrate Environmental pollution
			85555.5	Illustrate social issues that effect Environment
TE	V	Database Management Systems	822501.1	Explain the basics of Database Management System and develop the entity relationship diagram for any database application.
			822501.2	Construct the queries using Formal Relational Query Languages.
			822501.3	Construct the queries using Structured Query Language and explain the working of Function, Procedure and Triggers.
			822501.4	Identify and apply normalization methods on database, along with understanding of indexing basic concept
			822501.5	Discuss the concept of transaction, concurrency, recovery and various database system architectures.
TE	V	Software Engineering	822502.1	Define basic concepts of software engineering
			822502.2	Describe software requirements
			822502.3	Illustrate the design of software
			822502.4	Test developed software for requirements validation
			822502.5	Outline software project planning activities and schedule them for project execution
TE	V	Formal Language and Automata Theory	822503.1	Understand the basic of formal languages and automata theory.
			822503.2	Describe and transform regular expression for computation.
			822503.3	Construct/convert grammars for formal languages.
			822503.4	Interpret PDA for Context free language and regular language.
			822503.5	Design and analyze the Turing machine for formal languages.
TE	V	E- Commerce (PEC-I)	822544.1	Describe the foundations and importance of E-commerce
			822544.2	Discuss retailing in E-commerce

Class	Semester	Name of the Subject	CO	Course Outcome
			822544.3	Demonstrate the impact of E-commerce on business models and strategy
			822544.4	Categorize Internet trading relationships including Business to Consumer, Business-to-
			822544.5	Assess electronic payment systems.
TE	V	Cyber Law and Ethics (OEC - I)	822553.1	To able to understand the objective and scope of IT act 2000
			822553.2	To get acquainted with the Intellectual Property issues for obtaining the copyright, patents, trademark
			822553.3	To able to get familiar with the procedure of handling the process of Physical security breach
			822553.4	To able to understand the characteristics of Cybercrime and its classification
			822553.5	To be able to classify and understand information security system with respect to threats and attacks.
TE	V	Database Management Systems Lab	822506.1	Develop a database with various constraints using SQL Data Definition Language.
			822506.2	Use DML queries to retrieve, insert, delete and update the database.
			822506.3	Apply various SQL features such as Aggregate functions, Set Operations and Views to resolve the queries.
			822506.4	Demonstrate Stored Procedure, Stored function and Trigger on a Sample Databases.
			822506.5	Develop database application using ODBC/JDBC interface to store and retrieve data from the database.
TE	V	Software Engineering Lab	822507.1	Analyze the type of UML diagrams required for proposed software system
			822507.2	Decide contents of the UML diagrams
			822507.3	Design basic and advanced structural UML modeling diagrams
			822507.4	Design basic and advanced behavioral UML modeling diagrams
			822507.5	Develop various UML models for proposed software
TE	V	Web Programming Language Lab	822508.1	Able to learn new web languages (PHP, JavaScript)

Class	Semester	Name of the Subject	CO	Course Outcome
			822508.2	Make use of appropriate web scripting language for different applications
			822508.3	Install and configure web server
			822508.4	Design interactive website
			822508.5	Design and develop database web application
TE	V	Minor Project (Stage – I)	822509.1	Demonstrate a sound technical knowledge of their selected project topic.
			822509.2	Undertake problem identification, formulation and solution.
			822509.3	Design engineering solutions to complex problems utilizing a systems approach.
			822509.4	Conduct an engineering project
			822509.5	Demonstrate the knowledge, skills and attitudes of a professional engineer.
TE	VI	Operating Systems	822601.1	Discuss fundamental of OS
			822601.2	Solve process scheduling, critical section, concurrency problems.
			822601.3	Explain deadlock & memory management concept.
			822601.4	Describe file management system.
			822601.5	Identify efficient disk scheduling algorithm.
TE	VI	Computer Networks	822602.1	Explain the basics concepts of data communication and networking.
			822602.2	Solve numerical of IP addressing and describe internet protocol along with address mapping.
			822602.3	Describe error reporting and forwarding along with routing protocols.
			822602.4	Demonstrate process to process communication at transport layer using TCP and UDP.
			822602.5	Discuss network security and wireless networking concepts.
TE	VI	Design and Analysis of Algorithms	822603.1	Understand and design of basic algorithms and computer time complexity.
			822603.2	Design and analyze algorithm by Divide and conquer approach.
			822603.3	Apply backtracking and Branch-bound approach to real word problem.
			822603.4	Simulate Greedy and Dynamic programming approach.
			822603.5	Recognize basic computational types of problem

Class	Semester	Name of the Subject	CO	Course Outcome
TE	VI	Embedded System	822642.1	Explain the basic concept of Embedded System
			822642.2	Describe Embedded System Architecture and its communication protocols
			822642.3	Use process of Embedded System Development
			822642.4	Apply concept of ARM architecture
			822642.5	Explain Real Time Operating System.
TE	VI	Project Management	822651.1	Use and explain different stages of project management
			822651.2	Make use of project planning and scheduling tools
			822651.3	Know the methods of cost estimation of project
			822651.4	Apply project risk management for controlling risk
			822651.5	Understand the procurement management for the project
TE	VI	Operating Systems Lab	822606.1	Apply process scheduling concept.
			822606.2	Explain file management & memory management concept.
			822606.3	Discuss concurrency problems.
			822606.4	Analyse the disk scheduling algorithm.
			822606.5	Describe Inter Process Communication mechanism
TE	VI	Computer Networks Lab	822607.1	Apply the concept of bit stuffing in framing.
			822607.2	Use Run Length Encoding for data compression.
			822607.3	Demonstrate client server communication using TCP and UDP Socket.
			822607.4	Develop Cryptographic algorithms.
			822607.5	Build the network scenario in network simulation tool.
TE	VI	Design and Analysis of Algorithms Lab	822608.1	Analyze and Implement divide and conquer approach.
			822608.2	Implement dynamic programming approach
			822608.3	Implement Branch and bounding approach
			822608.4	Implement backtracking approach.
			822608.5	Implement greedy algorithm approach

Class	Semester	Name of the Subject	CO	Course Outcome
TE	VI	Minor Project	822609.1	Demonstrate a sound technical knowledge of their selected project topic.
			822609.2	Undertake problem identification, formulation and solution.
			822609.3	Design engineering solutions to complex problems utilizing a systems approach.
			822609.4	Conduct an engineering project
			822609.5	Demonstrate the knowledge, skills and attitudes of a professional engineer.
BE	VII	Compiler Design	722701.1	Design Lexical Analyzer
			722701.2	Design Syntax Analyzer
			722701.3	Generate Intermediate Code
			722701.4	Illustrate different storage management schemes
			722701.5	Design Code Generator
BE	VII	Machine Learning	722721.1	Recognize the characteristics of machine learning that make it useful to real-world problems.
			722721.2	Able to use regularized regression and Classification algorithms.
			722721.3	Evalute machine learning algorithms and model selection.
			722721.4	Understand scalable machine learning and machine learning for IoT.
			722721.5	Understand Deep leaning and Expert system.
BE	VII	Data Mining	722731.1	To introduce students to the basic concepts and techniques of Data Mining.
			722731.2	To develop skills of using recent data mining software for solving practical problems.
			722731.3	To gain experience of doing independent study and research.
			722731.4	To study the methodology of engineering legacy databases for data warehousing and data mining to derive business rules for decision support systems.
			722731.5	Develop and apply critical thinking, problem-solving, and decision-making skills.
BE	VII	Quantitative Reasoning and Problem Solving	722743.1	Perform arithmetic calculations on number system, HCF and LCM and age
			722743.2	Solve application problems involving Time, Distance, Speed.
			722743.3	Calculate Time Taken at varies case.
			722743.4	Calculate percentage, average and simple interest.

Class	Semester	Name of the Subject	CO	Course Outcome
			722743.5	Classify data as categorical or quantitative.
BE	VII	Compiler Design Lab	722705.1	Demonstrate LEX and YACC tools.
			722705.2	Design Lexical Analyzer.
			722705.3	Design Syntax Analyzer.
			722705.4	Design Code Optimization.
			722705.5	Design Code Generator
BE	VII	Advanced Technology Lab I	722706.1	Break down real world problems / application.
			722706.2	Demonstrate Full Stack development.
			722706.3	Design Full Stack based applications.
			722706.4	Decide tools for Full Stack development.
			722706.5	Develop Full Stack based applications.
BE	VII	Project (Stage – I)	722707.1	Demonstrate a sound technical knowledge of their selected project topic.
			722707.2	Undertake problem identification, formulation and solution.
			722707.3	Design engineering solutions to complex problems utilizing a systems approach.
			722707.4	Conduct an engineering project
			722707.5	Demonstrate the knowledge, skills and attitudes of a professional engineer.
BE	VIII	Cyber Security	822801.1	Determine the act of Cyberoffenses.
			822801.2	Determine the Cybercrime through portable devices.
			822801.3	Determine the methods used in Cybercrime
			822801.4	Determine Phishing and Identity theft
			822801.5	Describe Computer Forensics.
BE	VIII	Soft Computing (Professional Elective Course – V)	822821.1	Apply soft computing methodologies includes neural network.
			822821.2	Apply soft computing methodologies includes fuzzy logic

Class	Semester	Name of the Subject	CO	Course Outcome
			822821.3	Apply soft computing methodologies includes genetic algorithm
			822821.4	Apply soft computing methodologies includes hybrid system
			822821.5	Design of certain scientific and commercial application using soft computing approach
BE	VIII	BlockChain (Professional Elective Course – VI)	822832.1	Understand the structure of a blockchain and why/when it is better than a simple distributed database
			822832.2	Discuss security aspects in blockchain through cryptography
			822832.3	Describe how Cryptocurrency mining works
			822832.4	Write smart contract using Ethereum frameworks and Hyperledger Fabric
			822832.5	Integrate ideas from various domains and develop block chain based solutions
BE	VIII	Logical Reasoning and Problem Solving (Open Elective Course – IV)	822843.1	Tell Analogy, Classification, perform coding and decoding on data
			822843.2	Recognize logical and philosophical reasoning.
			822843.3	Recognize logical reasoning applicable to real-life situations, solve real-life problems
			822843.4	Experience with diversity to demonstrate knowledge and sensitivity.
			822843.5	Solve application problems involving Clock, Calendar and Ratio and Proportion.
BE	VIII	Cyber Security Lab	822805.1	To describe Information Technology Act of India.
			822805.2	Describe Cyber Security
			822805.3	Demonstrate Offensive Cyber Security Tools
			822805.4	Demonstrate Defensive Cyber Security Tools
			822805.5	Demonstrate Security Testing Tools for Web Applications.
BE	VIII	Advanced Technology Lab - II	822806.1	Break down real world problems / application.
			822806.2	Demonstrate Full Stack development
			822806.3	Design Full Stack based applications

Class	Semester	Name of the Subject	CO	Course Outcome
			822806.4	Decide tools for Full Stack development
			822806.5	Develop Full Stack based applications.
BE	VIII	Project	822807.1	Demonstrate a sound technical knowledge of their selected project topic.
			822807.2	Undertake problem identification, formulation and solution.
			822807.3	Design engineering solutions to complex problems utilizing a systems approach.
			822807.4	Design engineering solutions to complex problems utilizing a systems approach.
			822807.5	Demonstrate the knowledge, skills and attitudes of a professional engineer.

Course Outcome for B.E. Mechanical Engineering

Class	Semester	Program	Name of the Subject	CO	Course Outcome
FE	I	B.E. Mechanical	Chemistry	812101.1	Analyse microscopic chemistry in terms of atomic and molecular orbitals and intermolecular forces.
				812101.2	Distinguish the ranges of the electromagnetic spectrum used for exciting different molecular energy levels in various spectroscopic techniques
				812101.3	Rationalise periodic properties such as ionization potential, electronegativity, oxidation states and electronegativity.
				812101.4	Rationalise bulk properties & processes using thermodynamic considerations
				812101.5	List major chemical reactions that are used in the synthesis of molecules.
FE	I	B.E. Mechanical	Engineering Graphics	812104.1	Introduction to engineering design and its place in society
				812104.2	Exposure to the visual aspects of engineering design
				812104.3	Exposure to engineering graphics standards
				812104.4	Exposure to solid modeling.
FE	I	B.E. Mechanical	English	812103.1	To acquire basic proficiency in English including reading and listening
				812103.2	To demonstrate proficiency in the use of written English, including proper spelling, Grammar and punctuation.
				812103.3	To enhance their ability to use spoken words in interpersonal communication, small group interactions and public speaking Comprehension, writing and
				812103.4	Become accomplished technical communicators.
FE	I	B.E. Mechanical	Mathematics - I	812102.1	Apply differential and integral calculus. Apart from some other applications they will have a basic understanding of Beta and Gamma functions.
				812102.2	The fallouts of Rolle's Theorem that is fundamental to application of analysis to Engineering problems.
				812102.3	The tool of Fourier series for learning advanced Engineering Mathematics.

Class	Semester	Program	Name of the Subject	CO	Course Outcome
				812102.4	To deal with functions of several variables that are essential in most branches of Engineering.The essential tool of matrices and linear algebra in a comprehensive manner.
FE	I	B.E. Mechanical	Chemistry Lab	812106.1	Upon successful completion of lab Course, student will be able to: The chemistry laboratory course will consist of experiments illustrating the principles of chemistry relevant to the study of science and engineering.
				812106.2	Estimate rate constants of reactions from concentration of reactants/products as a function of time
				812106.3	Measure molecular/system properties such as surface tension, viscosity, conductance of solutions, redox potentials, chloride content of water, etc
				812106.4	Synthesize a small drug molecule and analyse a salt sample .
FE	I	B.E. Mechanical	Engineering Graphics Lab	812108.1	Introduction to engineering design and its place in society
				812108.2	Exposure to the visual aspects of engineering design
				812108.3	Exposure to engineering graphics standards
				812108.4	Exposure to solid modeling.
FE	I	B.E. Mechanical	English Lab	812107.1	Students will be sensitized towards recognition of English sound pattern.
				812107.2	The fluency in speech will be enhanced.
FE	I	B.E. Mechanical	Workshop Practices	812105.1	Students will be able to fabricatecomponents with their own hands.
				812105.2	Get practical knowledge of the dimensional accuracies and dimensional tolerances possible
				812105.3	with different manufacturing processes.
				812105.4	Assemble different components, they will be able to produce small devices oftheir interest.

Class	Semester	Program	Name of the Subject	CO	Course Outcome
FE	II	B.E. Mechanical	Physics	812201.1	To study Bragg's Law and introduced to the principles of lasers, types of lasers and applications
				812201.2	Various terms related to properties of materials such as, permeability, polarization, etc.
				812201.3	Some of the basic laws related to quantum mechanics as well as magnetic and dielectric
				812201.4	properties of materials
				812201.5	Simple quantum mechanics calculations
				812201.6	Nanotechnology and their industrial applications.
FE	II	B.E. Mechanical	Mathematics-II	812202.1	Use mathematical tools needed in evaluating multiple integrals and their usage.
				812202.2	Apply effective mathematical tools for the solutions of differential equations that model physical processes.
				812202.3	Use tools of differentiation and integration of functions of a complex variable that are used in various techniques dealing engineering problems.
FE	II	B.E. Mechanical	Basic Electrical & Electronics	812203.1	Students will be able to demonstrate knowledge of circuit analysis using various basic laws and theorems of electrical circuits
				812203.2	Students will be able to demonstrate and understand definition and relationship of various AC circuits.
				812203.3	Understand working principle of PN junction diode, Zener diode and their applications.
				812203.4	Describe different configuration of Bipolar Junction Transistor.
				812203.5	Describe different configurations of FET
				812203.6	Understand operating principle Power Electronics Devices
				812203.7	Describe use of the Basic gate and Universal gate
FE	II	B.E. Mechanical	Programming for Problem Solving	812204.1	To formulate simple algorithms for arithmetic and logical problems
				812204.2	Understand the fundamentals of C programming.
				812204.3	To test and execute the programs and correct syntax and logical errors

Class	Semester	Program	Name of the Subject	CO	Course Outcome
				812204.4	Choose the loops and decision making statements to solve the problem.
				812204.5	To decompose a problem into functions and synthesize a complete program using divide and conquer approach
				812204.6	To use arrays, pointers and structures to formulate algorithms and programs
FE	II	B.E. Mechanical	Physics Lab	812205.1	To study Bragg's Law and introduced to the principles of lasers, types of lasers and applications
				812205.2	Various terms related to properties of materials such as, permeability, polarization, etc.
				812205.3	Some of the basic laws related to quantum mechanics as well as magnetic and dielectric
				812205.4	properties of materials
				812205.5	Simple quantum mechanics calculations
				812205.6	Nanotechnology and their industrial applications.
FE	II	B.E. Mechanical	Basic Electrical and Electronics Engineering Lab.	812206.1	Identify electrical and electronics components/equipments.
				812206.2	Simplify D.C. network using Superposition Theorem.
				812206.3	Simplify D.C. network using Thevenin's Theorem.
				812206.4	Learn diode V-I Characteristic
				812206.5	Understand BJJ as a switch
				812206.6	Understand LED, JFET, SCR V-I characteristics
FE	II	B.E. Mechanical	Programming for Problem Solving Lab	812207.1	Understand the fundamentals of C programming.
				812207.2	Choose the loops and decision making statements to solve the problem.
				812207.3	Use functions to solve the given problem.
				812207.4	Implement different Operations on arrays.
				812207.5	Understand strings and structures.
				812207.6	Understand the usage of pointers.

Class	Semester	Program	Name of the Subject	CO	Course Outcome
SE	III	B.E. Mechanical	Biology	812301.1	Describe the concepts of modern cell theories and identify the differences in eukaryotic and prokaryotic cells.
				812301.2	Explain the major groups of animal and plant kingdom
				812301.3	Demonstrate the advanced techniques in plant and animal tissue culturing, and able to calculate the growth rate of cells through culturing
				812301.4	Classify the microorganisms through different isolation techniques and illustrate microbial culture techniques
				812301.5	Illustrate mechanism involved in rDNA technology and apply the different aspects of Biotechnology
SE	III	B.E. Mechanical	Engineering Mechanics	812302.1	Use scalar and vector analytical techniques for analysing forces in statically determinate structures
				812302.2	Apply fundamental concepts of kinematics and kinetics of particles to the analysis of simple, practical problems
				812302.3	Apply basic knowledge of maths and physics to solve real-world problems
				812302.4	Understand measurement error, and propagation of error in processed data
				812302.5	Understand basic kinematics concepts – displacement, velocity and acceleration (and their angular counterparts);
				812302.6	Understand basic dynamics concepts – force, momentum, work and energy
				812302.7	Understand and be able to apply Newton's laws of motion
				812302.8	Understand and be able to apply other basic dynamics concepts - the Work-Energy principle, Impulse-Momentum principle and the coefficient of restitution
				812302.9	Extend all of concepts of linear kinetics to systems in general plane motion (applying Euler's Equation and considering energy of a system in general plane motion, and the work of couples and moments of forces)
				812302.1	Learn to solve dynamics problems. Appraise given information and determine which concepts apply, and choose an appropriate solution strategy
				812302.1	Attain an introduction to basic machine part s such as pulleys and mass-spring systems

Class	Semester	Program	Name of the Subject	CO	Course Outcome
SE	III	B.E. Mechanical	Electrical Drives and Controls	816304.1	Apply basic knowledge of science and engineering to understand electrical machines.
				816304.2	Analyse the construction, working principle and characteristics of motors.
				816304.3	Formulate the complex problems of machines and compare them
				816304.4	Apply the knowledge to selection of different drives for different purpose for the use of society
				816304.5	Perform the professional duties in manufacturing, operation and maintenance of electrical machines.
SE	III	B.E. Mechanical	Thermodynamics	812304.1	To apply energy balance to systems and control volumes, in situations involving heat and work interactions
				812304.2	control volumes, in situations involving heat and work interactions
				812304.3	To evaluate changes in thermodynamic properties of substances
				812304.4	To evaluate the performance of energy conversion devices
				812304.5	To differentiate between high grade and low-grade energies
SE	III	BE Mechanical	Industrial Psychology	812305.1	To be acquainted with Industrial Psychology subject , its nature , scope & importance
				812305.2	To Demonstrate knowledge of concepts like perception , motivation , group behavior , anger & stress management
				812305.3	To Think critically about concepts/issues like recruitment , training , performance appraisal & job satisfaction
				812305.4	To develop effective communication , motivation & other skills
				812305.5	To be able to develop interest & undertake further studies in these areas
SE	III	BE Mechanical	Electrical Drives and Controls Lab	812306.1	Understand constructional details of dc electrical machines and transformer
				812306.2	Understand specifications of machines.
				812306.3	Conduct practical for determination of characteristics of different type of generator, motors and transformers.

Class	Semester	Program	Name of the Subject	CO	Course Outcome
				812306.4	Able to analyze the test data for practical for applications, design and manufacturing processes
				812306.5	Understand methods of speed control and starters for dc motors
SE	III	BE Mechanical	Thermodynamics Lab	812306.1	Understand the constructional parts of domestic refrigerator and Air-Conditioner.
				812306.2	Understand the use and working of 2-stroke and 4-Stroke petrol/diesel engine.
				812306.3	Understand the working and Types of nozzles.
				812306.4	Understand the constructional and working of Air-Compressor and Centrifugal Pump.
				812306.5	Understand the constructional and working of Heat Exchanger.
SE	III	BE Mechanical	Computer Graphics Lab	812308.1	Demonstrate and understand the basic concepts of geometric modeling and computer graphics.
				812308.2	Drafting of mechanical elements.
				812308.3	Programs for mechanical elements in Auto-LISP.
				812308.4	Solve numerical on transformation.
				812308.5	Use of geometric transformations on graphics objects and their application in composite form
S.E.	IV	B.E. Mechanical	Mathematics – III	812401.1	Solve linear differential equations using Laplace transforms.
				812401.2	Evaluate Fourier and Z transforms and improper integrals.
				812401.3	Estimate coefficient of variation between data's
				812401.4	solve the heat wave equation in one,two dimention
				812401.5	Estimate chance of occurrence of events by Normal,Possion distribution
S.E.	IV	B.E. Mechanical	Introduction to Engineering Design Principles	812402.1	Identify needs and formulate design problem
				812402.2	Follow engineering design process with due consideration to all requirements and constraints and make decisions
				812402.3	Apply scientific principles to design problem

Class	Semester	Program	Name of the Subject	CO	Course Outcome
				812402.4	Work in a team and communicate design output
				812402.5	Relate curricular courses to real life engineering
S.E.	IV	B.E. Mechanical	Applied Thermodynamics	812403.1	After completing this course, the students will get a good understanding of various practical power cycles and heat pump cycles.
				812403.2	They will be able to analyze energy conversion in various thermal devices such as engines, nozzles, diffusers
				812403.3	They will be able to comprehend the phenomena of refrigeration and air conditioning system
				812403.4	They will be able to understand phenomena occurring in high speed compressible flows.
				812403.5	They will be able to understand phenomena occurring in reciprocating
S.E.	IV	B.E. Mechanical	Fluid Mechanics and Fluid Machines	812404.1	Upon completion of this course, students will be able to mathematically analyse simple flow situations
				812404.2	They will be able to evaluate the performance of pumps and turbines.
				812404.3	Understand Euler's equation of motion hence to reduce Bernoulli's equation and its application in fluid mechanics.
				812404.4	Examine energy losses in pipes transitions and Evaluate pressure drop in pipe flow using Hagen-Poiseuille's equation.
S.E.	IV	B.E. Mechanical	Industrial Economics	812405.1	To be acquainted with economics as a subject , its nature , scope & importance
				812405.2	To be able to demonstrate knowledge about basic concepts of micro-economics
				812405.3	To be able to think critically about macro-economic issues like economic growth , inflation , Govt's monetary & fiscal policies
				812405.4	To be aware of concepts like trade deficit , foreign exchange rate & appreciate Govt's trade policy
				812405.5	To develop an interest & be able to undertake further study in these areas
S.E.	IV	B.E. Mechanical	Applied Thermodynamics Lab	812406.1	Comprehend the Performance parameters of 4-Stroke petrol/diesel engine

Class	Semester	Program	Name of the Subject	CO	Course Outcome
				812406.2	Analyze the Calorific value of fuel sample by using Bomb calorimeter.
				812406.3	Investigate the Flue Gas analysis using gas analyzer.
				812406.4	Conduct a trial on air compressor.
				812406.5	Understand the difference parameters of refrigeration system and properties of air.
S.E.	IV	B.E. Mechanical	Fluid Mechanics and Fluid Machines Lab	812407.1	Upon completion of this course, students will be able to mathematically analyze simple flow situations
				812407.2	They will be able to evaluate the performance of pumps and turbines.
				812407.3	Understand Euler's equation of motion hence to reduce Bernoulli's equation and its application in fluid mechanics.
				812407.4	Examine energy losses in pipes transitions and Evaluate pressure drop in pipe flow using Hagen-Poiseuille's equation.
S.E.	IV	B.E. Mechanical	Metrology and Quality Control Lab	812408.1	Attain an introduction to basic machine part s such as pulleys and mass-spring systems
				812408.2	Select and use appropriate measurement instrument for a given application
				812408.3	Apply the basics of sampling in the context of manufacturing
				812408.4	Select and apply the seven basic quality tools in well-defined applications.
T.E.	V	B.E. Mechanical	Heat Transfer	812501.1	Formulate and analyze a heat transfer problem involving any of the three modes of heat transfer
				812501.2	Obtain exact solutions for the temperature variation using analytical methods where possible or employ approximate methods or empirical correlations to evaluate the rate of heat transfer
				812501.3	Design devices such as heat exchangers and estimate the insulation needed to reduce heat losses where necessary.
				812501.4	Study convection & radiation concept.
				812501.5	Identify and select type of shell and tube exchanger based on TEMA classification Design double pipe heat exchanger, Shell and tube heat exchanger, finned tube and other compact heat exchangers

Class	Semester	Program	Name of the Subject	CO	Course Outcome
T.E.	V	B.E. Mechanical	Manufacturing Processes	812502.1	Understand metal casting process, calculate pouring time, elements of gating system and defects in it.
				812502.2	Understand principle of metal forming and working of various metal forming processes.
				812502.3	Understand meaning, use of welding, techniques and types of it.
				812502.4	Understand working of machines used in manufacturing and their use.
				812502.5	Understand process of powder metallurgy, use and properties of products.
T.E.	V	B.E. Mechanical	Strength of Materials	812503.1	Recognize various types loads applied on machine components of simple geometry and understand the nature of internal stresses that will develop within the components
				812503.2	Evaluate principal stresses, strains and apply the concept for design and Draw the SFD and BMD for different types of loads and support conditions
				812503.3	Determine the stresses and strains in the members subjected bending and Evaluate the slope and deflection of beams subjected to loads
				812503.4	Determine the stresses and strains in the members subjected to torsional loads.
				812503.5	Determine the stresses and strains in the pressure vessels due to intensity of pressure
T.E.	V	B.E. Mechanical	Energy Conservation & Management	812543.1	utilise the available resources in optimal ways
				812543.2	apply the knowledge of the subject to calculate the efficiency of various thermal utilities.
				812543.3	to design suitable energy monitoring system to analyze and optimize the energy consumption in electrical utilities
				812543.4	handle various measuring devices needed for energy audit
				812543.5	understand and analyse the energy data of industries
T.E.	V	B.E. Mechanical	Industrial & Safety Engineering	812554.1	understand and practice the concepts of industrial safety engineering
				812554.2	apply different assessment techniques to calculate and predict losses

Class	Semester	Program	Name of the Subject	CO	Course Outcome
				812554.3	understand various human error factors and remedies
				812554.4	understand scientific way of investigation of accident
				812554.5	understand the various safety precautions to be taken in various industries and remedies for the same
T.E.	V	B.E. Mechanical	Heat Transfer Lab	812506.1	Determination of thermal conductivity of metal rod / insulating powder / composite wall.
				812506.2	Determination of LMTD, overall heat transfer coefficient and effectiveness of heat exchanger in parallel and counter flow arrangement and compare them.
				812506.3	Determination of temperature distribution, fin efficiency, effectiveness in natural convection and forced convection
				812506.4	Determination of emissivity of a test surface.
				812506.5	Determination of Stefan Boltzmann constant.
T.E.	V	B.E. Mechanical	Manufacturing Processes Lab	812507.1	To undestand the sheet metal operations, patterns, casting,lost foam casting, molding, forging,closed die forging,properties of aluminium and powder metallurgy techniques.
				812507.2	To handle the tools,equipments and measuring instruments for a given
				812507.3	To understand the fundamentals of various manufacturing process.
T.E.	V	B.E. Mechanical	Machine Drawing Lab	812508.1	to define terms used to explain abbreviations
				812508.2	to list / name / sketch different types of machine parts, assemblies and their conventions
				812508.3	to read and interpret the given details of production drawing of machine components
				812508.4	to imagine shapes and sizes of components and visualize / draw their views in different directions
				812508.5	to imagine and assemble the given set of components to form a workable machine assembly

Class	Semester	Program	Name of the Subject	CO	Course Outcome
T.E.	V	B.E. Mechanical	Minor Project (Stage – I)	812509.1	To understand the basic concepts & broad principles of projects.
				812509.2	To understand the value of achieving perfection in project implementation & completion
				812509.3	To apply the theoretical concepts to solve problems with teamwork and multidisciplinary approach.
				812509.4	To demonstrate professionalism with ethics; present effective communication skills and relate engineering issues to broader societal context.
T.E.	VI	B.E. Mechanical	Kinematics and Theory of Machines	812601.1	Distinguish kinematic and kinetic motion.
				812601.2	Designing a suitable mechanism depending on application
				812601.3	Drawing displacement diagrams and cam profile diagram for followers executing different types of motions and various configurations of followers,
				812601.4	Drawing velocity and acceleration diagrams for different mechanisms,
				812601.5	Selecting gear and gear train depending on application.
T.E.	VI	B.E. Mechanical	Manufacturing Technology	812602.1	Understand geometry and use of single point cutting tool, forces of machining and different types of tool wear.
				812602.2	Understand working principle of various machining processes their applications.
				812602.3	Understand rapid prototyping, its types and role of automation in manufacturing industry.
				812602.4	Understand different advanced manufacturing process.
				812602.5	Understand aspects product design and manufacturing.
T.E.	VI	B.E. Mechanical	Material Engineering	812603.1	Identify crystal structures for various materials and understand the defects in such structures.
				812603.2	Understand mechanical properties of materials and use.
				812603.3	Interpret phase diagram and understand various reactions on Iron Carbon diagram.
				812603.4	Understand how to tailor material properties of ferrous and non-ferrous alloys with the help of heat treatment.

Class	Semester	Program	Name of the Subject	CO	Course Outcome
				812603.5	Understand composition, properties and use of alloy steel and cast iron.
T.E.	VI	B.E. Mechanical	Mechanical Estimation and Costing	812642.1	Calculate material cost of given component/product
				812642.2	Identify and estimate elements of cost in various processes.
				812642.3	Perform break even analysis to calculate break even quantity
				812642.4	Investigate the problem of cost and suggest their solution using cost reduction techniques.
				812642.5	Interpret given model of balance sheet and profit loss account.
T.E.	VI	B.E. Mechanical	Internal Combustion Engine	812643.1	Understand the Basic Cycles of Internal Combustion Engine
				812643.2	Understand fuel feed systems for petrol and diesel engines
				812643.3	To study and understand of cooling and lubrication system in Internal Combustion System
				812643.4	To study combustion process of SI and CI engines
				812643.5	To study recent trends in Internal combustion Engine
T.E.	VI	BE Mechanical	Piping Engineering	812654.1	To be aquainted with Piping Engg. subject , its nature , scope & importance
				812654.2	To be able to demonstrate knowledge about equipments , control systems , design standards , drawing conventions etc.
				812654.3	To be able to think critically about design parameters , material selection criteria , pipe layout , supports etc.
				812654.4	To be able to develop skills in piping design , P & ID , ISO , fabrication drawings
				812654.5	To be able to develop interset as a career option & undertake further study in this area
T.E.	VI	BE Mechanical	Kinematics and Theory of Machines	812606.1	Distinguish kinematic and kinetic motion.
				812606.2	Identify the basic relations between velocity, and acceleration.

Class	Semester	Program	Name of the Subject	CO	Course Outcome
				812606.3	Use graphical and analytic methods to study the motion of a planar mechanism
				812606.4	design linkage, cam and gear mechanisms for a given motion or a given input/output motion or force relationship.
				812606.5	analyze the motion and the dynamical forces acting on mechanical systems composed of linkages, gears and cams.
T.E.	VI	BE Mechanical	Manufacturing Technology Lab	812607.1	To understand the different advanced production technologies
				812607.2	Able to perform and understand different machining operations using CNC machine
				812607.3	To understand concept of tool life and tool wear
				812607.4	Able to understand concept of lean manufacturing
				812607.5	Able to know the use and working of various material handling devices
T.E.	VI	BE Mechanical	Material Engineering Lab	812608.1	Students who have undergone the course will be able to understand the measurement of mechanical properties of materials
				812608.2	They will be able to characterize the dynamic behavior of mechanical systems
T.E.	VI	BE Mechanical	Minor Project	812609.1	To understand the basic concepts & broad principles of projects.
				812609.2	To understand the value of achieving perfection in project implementation & completion.
				812609.3	To apply the theoretical concepts to solve problems with teamwork and multidisciplinary approach.
				812609.4	To demonstrate professionalism with ethics; present effective communication skills and relate engineering issues to broader societal context.
B.E.	VII	B.E. Mechanical	Design of Machine Elements	712701.1	Apply knowledge of the stress and strain of mechanical components; and understand, identify and quantify factor of safety, failure modes for simple mechanical components (Shaft and Coupling) subjected to direct and bending and combined loading.

Class	Semester	Program	Name of the Subject	CO	Course Outcome
				712701.2	Develop logical and analytical ability to apply knowledge of various theories of failures for design of joints, bolts, springs etc.
				712701.3	The selection of gear types, sizing, analysis and material selection of spur and helical gear systems.
				712701.4	The selection of gear types, sizing, analysis and material selection of bevel and worm gear systems.
				712701.5	Estimate endurance strength of ductile and brittle materials and develop analytical ability to apply fatigue theories for ductile and brittle material in static and dynamic loading.
B.E.	VII	B.E. Mechanical	Operation Research	712722.1	Use methods for solving OR models, OR approach to problem solving
				712722.2	Use the method of the graph simplex in solving linear program and to find the optimal solution
				712722.3	Build and solve Transportation Models and Assignment Models.
				712722.4	Describe the characteristics of different types of decision-making environments and the appropriate decision making approaches and tools to be used in each type.
				712722.5	Build and solve Replacement Models and Sequencing Models.
B.E.	VII	B.E. Mechanical	Power Plant Engineering	712733.1	layout, construction and working of the components of thermal power plant
				712733.2	layout, construction and working of the components inside a Diesel, Gas and Combined cycle power plants
				712733.3	layout, construction and working of the components inside nuclear power plant
				712733.4	layout, construction and working of the components of hydroelectric power plant and other renewable sources of power plant
				712733.5	To study economics and environmental issues of power plants
B.E.	VII	B.E. Mechanical	Research Methodology	712744.1	Develop understanding on various kinds of research, objectives of doing research, research process, research designs and sampling.
				712744.2	Apply basic knowledge on qualitative research techniques

Class	Semester	Program	Name of the Subject	CO	Course Outcome
				712744.3	Apply knowledge on measurement & scaling techniques as well as the quantitative data analysis
				712744.4	Perform data analysis-and hypothesis testing procedures
				712744.5	Write and interpret the report and thesis in technical way.
B.E.	VII	B.E. Mechanical	Design of Machine Elements Lab	712705.1	design shaft under various conditions
				712705.2	design Coupling
				712705.3	design Permanent Joints and Temporary Joints
				712705.4	design Leaf spring
				712705.5	convert design dimensions into working/manufacturing drawing and use of design data book/standard codes to standardize the designed dimensions
B.E.	VII	B.E. Mechanical	Computer Aided Design Lab	127102.1	Apply the concepts of Computer Aided Design.
				127102.2	Apply the concepts of Computer Aided Graphics.
				127102.3	Apply the concepts of Computer Aided Modelling & Automation.
				127102.4	Apply the concepts of Computer Aided Manufacturing & C.N.C. Programming
				127102.5	Apply the concepts of Introduction to FMS, GT and Robotics
B.E.	VII	B.E. Mechanical	Project (Stage – I)	712707.1	To understand the basic concepts & broad principles of projects.
				712707.2	To understand the value of achieving perfection in project implementation & completion.
				712707.3	To apply the theoretical concepts to solve problems with teamwork and multidisciplinary approach.
				712707.4	To demonstrate professionalism with ethics; present effective communication skills and relate engineering issues to broader societal context.
B.E.	VIII	B.E. Mechanical	Refrigeration & Air Conditioning	812801.1	Understand the principles of refrigeration and remember the application of air refrigeration

Class	Semester	Program	Name of the Subject	CO	Course Outcome
				812801.2	Learn the working of single stage, multistage and Multi-Evaporator using vapour compression refrigeration system with different type of refrigerants.
				812801.3	Study the working principles and its application of vapor absorption refrigeration system.
				812801.4	Apply the knowledge of psychrometry to various psychrometric processes in Air-conditioning system.
				812801.5	Learn different types of Air-Conditioning system used for Human comfort and Use P-h, T-S and Psychometric charts to solve refrigeration and Air conditioning design problems.
B.E.	VIII	B.E. Mechanical	Renwable Energy sources & Technology	812823.1	describe the use of solar energy and the various components used in the energy production with respect to applications like - heating, cooling, desalination, power generation, drying, cooking etc.
				812823.2	appreciate the need of Wind Energy and the various components used in energy generation and know the classifications.
				812823.3	understand the concept of Biomass energy resources and their classification, types of biogas plants- applications
				812823.4	acquire the knowledge of wave power & tidal power
				812823.5	acquire the knowledge of fuel cells & hydrogen energy
B.E.	VIII	B.E. Mechanical	Automobile Engineering	812832.1	To compare and select the proper automotive system for the vehicle.
				812832.2	To analyze the performance of the vehicle. Demonstrate the working of different types of final drives, steering gears and braking systems
				812832.3	To diagnose the faults of automobile vehicles.
				812832.4	Illustrate the constructional features of wheels, tyres and suspension systems
				812832.5	To apply the knowledge of EVs, HEVs and solar vehicles
B.E.	VIII	B.E. Mechanical	Industrial & System Engineering	812842.1	solve forecasting problem by applying different techniques & understand planning, scheduling and sequencing problems for shop floor

Class	Semester	Program	Name of the Subject	CO	Course Outcome
				812842.2	apply work study techniques and understands its importance for better productivity
				812842.3	demonstrate wage and incentive plans & acquire knowledge of industrial legislation
				812842.4	create know-how on solving open-ended problems, utilizing creativity, problem formulation & generation of need statements.
				812842.5	Apply various realistic aspects such as safety, reliability, manufacturability, operations, aesthetics, ethics and sustainability.
B.E.	VIII	B.E. Mechanical	Refrigeration & Air Conditioning Lab	812805.1	Comprehend the performance parameters of Vapour Compression Refrigeration system and domestic refrigerator.
				812805.2	Evaluate cycle performance and actual coefficient of performance (C.O.P.) of ICE Plant
				812805.3	Analyze the performance parameters of Vapour Absorption refrigeration system.
				812805.4	Apply the knowledge of psychrometry to various psychrometric processes in Air-conditioning system.
				812805.5	Know different types of compressors, expansion and Safety used in Refrigeration and Air-Conditioning system, charging of refrigeration system.
B.E.	VIII	B.E. Mechanical	Finite Element	812806.1	Understand the basic finite element formulation techniques.
				812806.2	Derive equations in finite element methods for 1D problems.
				812806.3	Derive equations in finite element methods for 2D problems.
				812806.4	Derive equations in finite element methods for 3D problems.
				812806.5	Understand the basic concept of Simulation and its techniques
B.E.	VIII	B.E. Mechanical	PROJECT	812807.1	To understand the basic concepts & broad principles of projects.

Class	Semester	Program	Name of the Subject	CO	Course Outcome
				812807.2	To understand the value of achieving perfection in project implementation & completion
				812807.3	To apply the theoretical concepts to solve problems with teamwork and multidisciplinary approach.
				812807.4	To demonstrate professionalism with ethics; present effective communication skills and relate engineering issues to broader societal context.

Course Outcome for Master of Business Administration (MBA)

Class	Semester	Program	Name of the Subject	CO	Course Outcome
MBA-I	I	MBA	Management Science	101.1	Understand the nature and evolution of management.
				101.2	Understand the functions of management related to planning, organizing, directing & controlling.
				101.3	Understand the functions of management related to staffing, coordination and decision making.
				101.4	Understand Indian Management Practices and Management Audit.
				101.5	Understand TOWS Matrix, Benchmarking, Diversity, Multiculturalism as Global Management Practices.
				101.6	Apply and Analyze the aspects of management science through case study.
				101	
MBA-I	I	MBA	Corporate Communication Skills	102.1	Understand the process, objectives, and barriers to communication.
				102.2	Understand types of communication.
				102.3	Understand the nature of reading, speaking, listening and interpersonal skills.
				102.4	Understand the nature of effective oral communication through telephone, face-to-face, meetings and interview.
				102.5	Understand the nature of effective written communication through memo, notice, letters and reports writing.
				102.6	Understand modern techniques of communications.
				102	
MBA-I	I	MBA	Managerial Economics	103.1	Analyze determinants and elasticity of demand for a product and their relevence to business revenue.
				103.2	Analyze the market characteristics of given product offerings.
				103.3	Understand major macroeconomic issues in business environment.
				103.4	Differenciate among components of national income aggregates.
				103.5	Understand major macroeconomic policy instruments.
				103.6	Understand the nature of knowledge economy.

Class	Semester	Program	Name of the Subject	CO	Course Outcome
				103	
MBA-I	I	MBA	Human Resource Management	104.1	Understand the basics of human resource management.
				104.2	Understand Human Resource Planning, Recruitment, Selection, Placement and Induction.
				104.3	Describe career planning, career development and succession planning.
				104.4	Understand Performance Appraisal Process and methods.
				104.5	Understand & differentiate between training & development.
				104.6	Explain current trends in HRM.
				104	
MBA-I	I	MBA	Business Accounting & Costing	105.1	Understand the conceptual framework of accounting & demonstrate the knowledge of current accounting standards.
				105.2	Understand & Prepare Propritors final Account with adjustment.
				105.3	Analyze Bank Reconciliation Statement to identify & rectify errors.
				105.4	Understand cost accounting through preparation of cost sheet.
				105.5	Understand & Analyze inventory management through application of major tools & techniques.
				105.6	Understand & workout labor cost and overheads.
				105	
MBA-I	I	MBA	Organizational Behavior-I	106.1	Understand the Importance, challenges and opportunities for Organizational Behavior.
				106.2	Understand the Individual Perspective w-r-t Organizational Behavior.
				106.3	Understand the effectiveness of group dynamics.
				106.4	Understand advantages of Interpersonal relationship.
				106.5	Understand the types and theories of Motivations.
				106.6	Analyze and examine the aspects of organizational behaviour through case study.
				106	
MBA-I	I	MBA	Corporate Social Responsibility	107.1	Understand the major social issues and their causes.
				107.2	Understand & Analyze the professional ethics in marketing, HRM, Finance & Accouting, IT & Production.
				107.3	Understand the basics of ethical mind management.

Class	Semester	Program	Name of the Subject	CO	Course Outcome
				107.4	Identify the areas of social responsibilities of business.
				107.5	Understand unethical behavior in Organizations.
				107.6	Understand the basics of good corporate governance.
				107	
MBA-I	I	MBA	Statistics & Quantitative Methods	108.1	Understand the nature & application of Measures of Central Tendancy, Partition Values and Dispersion.
				108.2	Understand & Analyze correlations, regression and index numbers through problems.
				108.3	Understand & Apply Chi-Square Test, T-test and ANOVA through problems.
				108.4	Understand & Apply Techniques of CPM and PERT through problems.
				108.5	Understand & Analyze LPP and Transportation problems through various techniques.
				108.6	Understand the Concept of Decision Theory and Game theory.
				108	
MBA-I	II	MBA	Business Research Methods	201.1	Remember & Understand basics of Research Methodology.
				201.2	Understand research design & sampling design.
				201.3	Understand relevant measurement & scaling techniques in research.
				201.4	Understand & Apply data collection methods in research.
				201.5	Understand the procedure and tools of Hypotheses Testing.
				201.6	Understand the techniques of data interpretation and contents of project report
				201	
MBA-I	II	MBA	IT For Managers	202.1	Understand the impact of Information Technology on Organizations and individuals.
				202.2	Understand internet software agents and internet technology.
				202.3	Understand E-Commerce, E-Business, E-Banking and E-CRM as emerging trends of information technology.
				202.4	Understand Database Management System, Data warehousing and data mining.
				202.5	Understand advantages, challenges and E-governance initiatives in India.
				202.6	Operate important functions in MS Word 2013, MS-Excel 2013, MS Power point 2013, MS Access 2013 and outlook express.
				202	
MBA-I	II	MBA	Global Economic Scenario	203.1	Describe the factors promoting Global Economic Integration.

Class	Semester	Program	Name of the Subject	CO	Course Outcome
				203.2	Analyze and judge the strategies for globalization of firms.
				203.3	Analyze the causes of Economic, Political and, Cultural risk associated with country.
				203.4	Understand the nature and policies for Internal and External Balance.
				203.5	Describe the functions of major International Financial Institutions.
				203.6	Understand the current economic affairs of Indian economy.
				203	
MBA-I	II	MBA	Marketing Management	204.1	Understand the nature and functions of Marketing Management.
				204.2	Understand the nature of Market Segmentation, Targeting Market, Product Positioning, Product Differenciation & USP.
				204.3	Understand the Four P's of Marketing Mix.
				204.4	Understand the nature of marketing research, nature of consumer behaviour and determinants of consumer behavior.
				204.5	Understand the Need, Importance & Problems in International Marketing.
				204.6	Understand the New Trends W.R.T. Event Marketing, Emotional Marketing, Agro Marketing, Non-Profit Marketing, Buzz Marketing, Green Marketing, Viral Marketing and Customer Relationship Management (CRM)
				204	
MBA-I	II	MBA	Financial Management	205.1	Understand the fundamentals of Financial Management
				205.2	Compute the problems of Cash Budget, Flexible Budget, Material Variances and Labour Variances.
				205.3	Interpret the financial statements through Comparative Financial Statements, Common Size Statement, Trend Analysis, and Ratio Analysis.
				205.4	Prepare cash flow statement and fund flow statement.
				205.5	Analyze cost-volume-profit techniques to determine optimal managerial decisions.
				205.6	Evaluate working capital effectiveness of a company based on its operating and cash conversion cycles.
				205	
MBA-I	II	MBA	Organizational Behavior-II	206.1	Understand the nature, functions and theories of Leadership.

Class	Semester	Program	Name of the Subject	CO	Course Outcome
				206.2	Understand the bases & tactics of power and factors contributing to Political behavior in Organization.
				206.3	Understand the forces & factors in Organizational change and Managing the resistance to change.
				206.4	Understand the sensitivity training, management by objectives and team building as methods of organizational Development Interventions.
				206.5	Understand the nature, consequences and coping strategies of the stress.
				206.6	Analyze and examine the aspects of Organizational Behavior through case studies. (Case on Team Building)
				206	
MBA-I	II	MBA	Services Management	207.1	Understand the 7P's of service marketing mix, challenges and factors before service sectors.
				207.2	Understand the basics of service expectation, service perception, service branding, service blueprinting & service quality management.
				207.3	Analyze the impact of service failure and service recovery strategies.
				207.4	Understand the essentials of Service Innovation & Design, service scape and Customer defined service standards.
				207.5	Understand the approaches and strategies of service pricing.
				207.6	Understand the nature & scope of emerging service sectors in India.
				207	
MBA-I	II	MBA	Operations Management	208.1	Understand the basics of operations management.
				208.2	Understand capacity planning, control & scheduling etc
				208.3	Describe factors affecting facility location planning and types of layout.
				208.4	Understand the material planning, control, budgeting, vendor evaluation and motivation.
				208.5	Understand the techniques of Inventory management, value analysis and value engineering.
				208.6	Understand productivity and advance concepts in operations management.
				208	
MBA-II	III	MBA	Strategic Management	301.1	Understand the basics of strategic management & strategic intent.

Class	Semester	Program	Name of the Subject	CO	Course Outcome
				301.2	Analyze the major corporate & business level strategies.
				301.3	Understand the techniques of strategic analysis and choice.
				301.4	Analyze the relevance of strategy and structure in strategic management.
				301.5	Understand the techniques of strategic evaluation and control.
				301.6	Analyze and Examine the aspects of strategic management through case study.
				301	
MBA-II	III	MBA	Management Information Systems	302.1	Understand the components, types and benefits of MIS in business.
				302.2	Undertand the development process of management information system.
				302.3	Understand and apply the management information system to functional areas of business.
				302.4	Understand security and ethics in management information system.
				302.5	Understand enterprise resource planning & business process re-engineering.
				302.6	Analyze the management information system, enterprise resource planning & business process re-engineering systems trough case study.
				302	
MBA-II	III	MBA	Legal Aspects Of Business	303.1	Understand major provisions of Indian Contract Act 1872.
				303.2	Understand major provisions of Law of Sale of Goods Act 1930.
				303.3	Understand major provisions of Limited Liability Partnership Act 2008.
				303.4	Understand major provisions of Negotiable Instruments Act 1881.
				303.5	Understand the Patent, Copyright & Trademarks Act Cover under The Inttelectual Property Law.
				303.6	Analyze and examine the legal aspect of business through case studies.
				303	
MBA-II	III	MBA	Banking & Investment Management	304-A.1	Describe & differentiate major terminologies in Indian banking sector.
				304-A.2	Understand and analyze the impact of NPA and RBI's Credit Planning Instruments on bank business.
				304-A.3	Understand and differentiate the characteristics of various investment avenues.
				304-A.4	Understand the nature & basic terminologies of Capital Market & Commodity Market.
				304-A.5	Understand and differentiate various insurance & mutual fund products.

Class	Semester	Program	Name of the Subject	CO	Course Outcome
				304-A.6	Understand the technical analysis, fundamental analysis and portfolio management strategies.
				304-A	
MBA-II	III	MBA	Product & Brand Management	304-B.1	Understand marketing planning and marketing strategies in different phases of PLC.
				304-B.2	Understand forces driving competition and sales forecasting methods.
				304-B.3	Understand the strategies of product positioning, differentiating and new product development process.
				304-B.4	Describe the concept of brand positioning and strategic brand management process.
				304-B.5	Understand the nature of brand equity and techniques of measuring brand performance.
				304-B.6	Understand the management of brand extention and global branding.
				304-B	
MBA-II	III	MBA	Industrial Relations & Labour Welfare	304-C.1	Understand the employee discipline and trade unionism in the context of industrial relations.
				304-C.2	Understand Indistrial Dispute Settlement Mechanism.
				304-C.3	Understand the process of grievance and collective bargaining.
				304-C.4	Understand labor welfare with respect to industrial health and safety.
				304-C.5	Understand the nature of Workers Participation in Management, Employee Empowerment and Quality Circles.
				304-C.6	Understand International Labor Organization & Its impact on indian labor.
				304-C	
MBA-II	III	MBA	World Class manufacturing & Process Mgt	304-D.1	Understand nature of activity scheduling, resource planning and recent trends with respect to manufacturing.
				304-D.2	Understand the nature of World Class Manufacturing & Technology Transfer.
				304-D.3	Understand the types of Innovative Manufacturing System.
				304-D.4	Understand the Major Process Management tools & Techniques.
				304-D.5	Understand the nature of maintainance and spare part management.
				304-D.6	Understand the Management of Industrial Safety.
				304-D	

Class	Semester	Program	Name of the Subject	CO	Course Outcome
MBA-II	III	MBA	HTML & Website Management	304-G.1	Undertand the structure of HTML.
				304-G.2	Understand the functions of Tables, Links, Graphics and Forms in HTML.
				304-G.3	Understand the application of types and font properties related to Cascading Style Sheets.
				304-G.4	Understand the strcuture, types, stages and tools of website development.
				304-G.5	Understand the application of domain management, web server management and email services.
				304-G.6	Understand the Search Engine Optimization (SEO) its tools.
				304-G	
MBA-II	III	MBA	Tax Management	305-A.1	Understand the basic concepts in Income Tax Act 1961.
				305-A.2	Compute the tax liability based on income from salery.
				305-A.3	Compute the tax liability based on Income from House Property.
				305-A.4	Compute the tax liability based on income from business and profession.
				305-A.5	Compute the tax liability based on capital gain and other sources.
				305-A.6	Understand the GST Merits, Demerits and compliance in relation to registration, supply of goods and leavy of tax.
				305-A	
MBA-II	III	MBA	Consumer Behavior & Service Marketing	305-B.1	Understand the nature of Consumer research and factors influencing buying behaviour.
				305-B.2	Understand the cross cultural consumer behaviour in International perspective.
				305-B.3	Understand the consumer reference groups and influence of culture on buying behaviour.
				305-B.4	Understand the nature of consumer perception and attitude.
				305-B.5	Understand the components of service marketing mix.
				305-B.6	Understand strategy for market leader, challengers, niche market & followers.
				305-B	
MBA-II	III	MBA	Human Capital Mgt & Development	305-C.1	Understand the nature of Human Capital Management.
				305-C.2	Understand the nature of Human Resource Development.
				305-C.3	Understand the nature & application of Job Analysis.
				305-C.4	Understand the application and methods of employee testing & selection.

Class	Semester	Program	Name of the Subject	CO	Course Outcome
				305-C.5	Understand nature and implementation process of training and potential appriasal of employee.
				305-C.6	Understand the nature of high potential Employees & Competency Management.
				305-C	
MBA-II	III	MBA	Management of Technology	305-D.1	Understand the nature of Technology Management.
				305-D.2	Understand the Linkage between technology, development and competition.
				305-D.3	Understand the Technological Forecasting & Technology Assessment.
				305-D.4	Understand the strategies of Technology diffusion, absorption and Transfer.
				305-D.5	Understand the Human Aspects in Technology Management.
				305-D.6	Understand the Social Issues in Technology Management.
				305-D	
MBA-II	III	MBA	Computer Networks	305-G.1	Understand the hardwares related to Networking.
				305-G.2	Understand type, structure and configurations of network designing.
				305-G.3	Understand the Network Protocols and Network Connection Services.
				305-G.4	Understand the Network Services.
				305-G.5	Understand the techniques of Network Security.
				305-G.6	Understand the tools of network management and troubleshooting.
				305-G	
MBA-II	III	MBA	Strategic Financial Management	306-A.1	Understand and differentiate major sources of finance.
				306-A.2	Understand & Examine the Capital Structure and Leverages of Firms.
				306-A.3	Appriase the Investment decision of Business Firm using major capital budgeting techniques.
				306-A.4	Understand & Justify the dividend strategies through case study.
				306-A.5	Understand the nature of turn arround strategies.
				306-A.6	Understand the rationale behind the use of mergers and acquisitions.
				306-A	
MBA-II	III	MBA	Sales & Distribution	306-B.1	Understand the major functions of sales management.

Class	Semester	Program	Name of the Subject	CO	Course Outcome
				306-B.2	Undersand the management of sales force involvement, evaluation and training.
				306-B.3	Understand the sales force management.
				306-B.4	Understand the nature of marketing channels, structure and distribution.
				306-B.5	Understand the management of channel intermedieries.
				306-B.6	Understand basics of quality customer service and integrated logistics.
				306-B	
MBA-II	III	MBA	Strategic Human Resource Management	306-C.1	Understand the nature of strategic HRM.
				306-C.2	Understand the nature & techniques of Job Design, Work System Design and Organizational Design.
				306-C.3	Understand the nature of Strategic Staffing & Employee Separation.
				306-C.4	Understand the nature of Global Competitiveness & Strategic HR.
				306-C.5	Understand the application of technology for strategic HRM.
				306-C.6	Understand the nature of Strategic Value addition through HR.
				306-C	
MBA-II	III	MBA	Logistics & Supply Chain Management	306-D.1	Understand the parameters, principles and technology used in SCM.
				306-D.2	Understand the nature, functions and role of logistics for business excellence.
				306-D.3	Understand the customer services and demand managemnet for competitiveness.
				306-D.4	Understand the planning and strategies of logistics.
				306-D.5	Understand the logistic mix with reference to warehousing, Material Handling and Material Storage.
				306-D.6	Understand the logistic mix with reference to Transportation, Logistical Packaging and Logistic Information system.
				306-D	
MBA-II	III	MBA	RDBMS	306-G.1	Understand and differentiate the types of database models.
				306-G.2	Understand the nature of ER Model as well as keys of Relational Database Design.
				306-G.3	Understand the nature & Application of DDL, DML and user related commands of SQL.
				306-G.4	Execute the Functions & operators to create tables & database.
				306-G.5	Execute the Joins, Sub-queries and Stored Procedures.

Class	Semester	Program	Name of the Subject	CO	Course Outcome
				306-G.6	Describe nature of PL/SQL.
				306-G	
MBA-II	III	MBA	Tally & Advanced Excel	307-A.1	differentiate between computerized accounting and manual accounting along with Use of Create, Alter & Delete a Company functions in Tally ERP 9
				307-A.2	Process (enter) the accounting transactions in Tally ERP 9.
				307-A.3	Execute advance functions in MS Excel.
				307-A.4	Execute function of Pivot Table, Charts, V-Lookup and H-Lookup.
				307-A.5	Understand & Differentiate among various types of Audit.
				307-A.6	Understand the Nature and benefits of Tax Base Software.
				307-A	
MBA-II	III	MBA	Global Marketing Management	307-B.1	Undersand and differentiate among international market entry strategies.
				307-B.2	Understand the process of new product development, product positioning and re-positioning strategies.
				307-B.3	Understand pricing methods and strategies for international brands.
				307-B.4	Understand problems as well as communication mix with respect to International Marketing Communciation.
				307-B.5	Understand functions and issues associated with International distribution channels.
				307-B.6	Understand the export procedures and documentation.
				307-B	
MBA-II	III	MBA	Labour Laws	307-C.1	Understand the major provisions of Factories Act 1948.
				307-C.2	Understand the major provisions of Minimum Wages Act 1948, Payment of Wages Act 1936 and Payment of Bonus Act 1965.
				307-C.3	Understand the major provisions of Equal Remuneration act, 1976 and Payment of Gratuity act, 1972.
				307-C.4	Understand the major provision of Workmen's Compensation Act, 1923 and Employees state insurance Act, 1948.
				307-C.5	Understand the major provisions of The employee Provident fund & Miscellaneous provisions Act, 1952.

Class	Semester	Program	Name of the Subject	CO	Course Outcome
				307-C.6	Understand the major provision of Maternity Benefit Act, 1961, Child Labour (Prohibition and Regulation) Act, 1986 and The Bonded Labour System (Abolition) Act, 1976.
				307-C	
MBA-II	III	MBA	Operations Research	307-D.1	Understand the nature of operation research.
				307-D.2	Understand the application of methods related tranporation problme.
				307-D.3	Understand the nature and methods of assignment models.
				307-D.4	Understand the nature of game theory.
				307-D.5	Solve the sequencing problem for given conditions.
				307-D.6	Understand major techniques of investment decision.
				307-D	
MBA-II	III	MBA	Software Engineering	307-G.1	Understand the types, characteristics and elements of system.
				307-G.2	Understand the phases and models of Systems Development Life Cycle.
				307-G.3	Understand the Process & Modeling of database design.
				307-G.4	Understand the System Documentation Techniques
				307-G.5	Understand the steps in Users Interface Design.
				307-G.6	Understand the basic of software testing, maintenance and reverse engineering.
				307-G	
MBA-II	III	MBA	Field Work/ Survey Report	308.1	Define the objectives of survey / project study in clear and concise manner.
				308.2	Formulate the clear research methodology using relevant technical terms, tools and steps.
				308.3	Cite substantial current and good quality literature
				308.4	Interpret the results along with validity thereof.
				308.5	Prepare the project report as per the standard format.
				308.6	Suggest the appropriate measures to solve the underlying problem in research work.
				308	
MBA-II	IV	MBA	Business & Government	401.1	Understand the nature of Business Environment and Economic Overview.
				401.2	Understand Government of India Initiative related to Make in India.
				401.3	Understand Government of India Initiative for Digital India, Startup India and Skill India.

Class	Semester	Program	Name of the Subject	CO	Course Outcome
				401.4	Understand Management Systems (MS)- Certification Schemes.
				401.5	Understand Nature of Indian Rural Market.
				401.6	Discuss the contribution of Indian companies under Make in India, Start up India and Skill India.
				401	
MBA-II	IV	MBA	Innovation Management	402.1	Understand the nature of innovation, creativity and effective innovation management.
				402.2	Understand key drivers, sources of innovation and innovation as strategy component.
				402.3	Understand current trends, factors influencing organization design and 7S framework essential for creative organization.
				402.4	Understand external, internal factors affecting New product development (NPD), process of New product development and types of NPD outsourcing.
				402.5	Understand individual creativity, group creativity and essential of creativity training.
				402.6	Understand open innovation, challenges around pursuit of open innovation approach and legal aspects of innovation.
				402	
MBA-II	IV	MBA	Indian Commercial Laws	403.1	Understand the major provisions under Consumer Protection Act 1986.
				403.2	Understand major provisions under the Companies Act 2013.
				403.3	Understand the major provisions under the Cyber laws – Information Technology Act 2000.
				403.4	Understand the major provisions under the Right to Information Act 2005.
				403.5	Understand the major provisions regarding Arbitration Act.
				403.6	Analyze and examine the aspects of Indian Commercial Law through case studies.
				403	
MBA-II	IV	MBA	Entrepreneurship & Project Management	404.1	Understand the nature of entrepreneur and entrepreneurship.
				404.2	Understand the entrepreneurship development programme and roles of various govt. Institutions in entrepreneurship development.
				404.3	Understand the emerging areas in entrepreneurship and nature of family business management.

Class	Semester	Program	Name of the Subject	CO	Course Outcome
				404.4	Understand the identification of business opportunity and procedure of registration of small scale industry.
				404.5	Understand the project appraisal & planning, sources of project finance and role of financial institutions.
				404.6	Understand the process of business planning, project monitoring & control.
				404	
MBA-II	IV	MBA	Financial Derivatives	405-A.1	Understand the nature, types and uses of derivative products.
				405-A.2	Understand the hedging strategies using Forward and Futures Contract.
				405-A.3	Understand the hedging strategies using option Contracts.
				405-A.4	Understand the derivative clearing and settlement process in India.
				405-A.5	Understand the nature & types of Swap contracts traded in India.
				405-A.6	Understand the nature, types and uses of credit derivatives.
				405-A	
MBA-II	IV	MBA	Marketing Research & Bus. Analytics	405-B.1	Discuss application of marketing research in business organizations.
				405-B.2	Understand the types of measurement scales and Questionnaire design & construction
				405-B.3	Understand the market survey as a method of data collection.
				405-B.4	Understand the nature of fieldwork and interview.
				405-B.5	Understand major techniques of data analysis & interpretation.
				405-B.6	Understand the specific research application w.r.t. test marketing, advertisement, Industrial Marketing, Export Marketing, Sales forecasting, Pricing, Consumer Behaviour and rural marketing.
				405-B	
MBA-II	IV	MBA	Performance & Compensation Mgt	405-C.1	Understand performance and competency management.
				405-C.2	Understand Performance management process.
				405-C.3	Understand techniques to enhance Team Performance.
				405-C.4	Understand compensation evaluation process and techniques of Job Evaluation.
				405-C.5	Understand Wage Determinants, Wage Boards and methods of wage payments.
				405-C.6	Understand incentives, Fringe Benefits and Payroll Procedures and Controls.

Class	Semester	Program	Name of the Subject	CO	Course Outcome
				405-C	
MBA-II	IV	MBA	Industrial & Productivity Management	405-D.1	Understand the Stages of Scientific & Technological Revolution & Globalization of Indian Industry.
				405-D.2	Understand the nature and application of work study.
				405-D.3	Understand the methods and techniques of work measurement.
				405-D.4	Understand the nature of productivity and ways to improve it.
				405-D.5	Understand the Waste Scrap & Disposal Management.
				405-D.6	Understand the constraint management.
				405-D	
MBA-II	IV	MBA	Information System Audit	405-G.1	Understand the nature of Information System Audit.
				405-G.2	Understand the Risks, types and stepts of Information SystemAudit.
				405-G.3	Understands the functions of Information System Audit Management.
				405-G.4	Understand the nature of Information Assets, Computer crimes and information security policy.
				405-G.5	Understand the major types of security control.
				405-G.6	Understand the nature and management of Business Continuity & Disaster Recovery.
				405-G	
MBA-II	IV	MBA	International Financial Management	406-A.1	Understand the conceptual framework of International Financial Management.
				406-A.2	Understand the operations in foreign exchange markets.
				406-A.3	Understand the nature and functions of International Monetary System.
				406-A.4	Understand the basic concepts of International Accounting.
				406-A.5	Understand the nature of international banking, Eurocurrency markets and depository receipts.
				406-A.6	Understand the nature, functions, importance, Principles and components of Balance of Payment.
				406-A	
MBA-II	IV	MBA	Retail Management & Digital Marketing	406-B.1	Understand the basics of retail management and factors influencing retail consumer.
				406-B.2	Understand merchandise planning systems, category management and retail pricing.

Class	Semester	Program	Name of the Subject	CO	Course Outcome
				406-B.3	Understand store design, space management and location of merchandise categories.
				406-B.4	Understand information system and customer service W.R.T. Retail Business.
				406-B.5	Understand the retail logistics, issues & innovations W.R.T. Supply Chain Management.
				406-B.6	Understand the methods of marketing communication in e-tailing.
				406-B	
MBA-II	IV	MBA	International HRM	406-C.1	Understand the nature of International Human Resource Management.
				406-C.2	Discuss factors in Social and Cultural Context of IHRM.
				406-C.3	Understand International Joint Ventures.
				406-C.4	Understand Human Resource Practices in International environment.
				406-C.5	Understand the nature of International Industrial Relations.
				406-C.6	Discuss the process, challenges and management of Repatriation in IHRM.
				406-C	
MBA-II	IV	MBA	International Quality Management	406-D.1	Understand theories of Quality Management and Total Quality Management.
				406-D.2	Understand the major Fork models of quality management.
				406-D.3	Understand the standards and documentation of ISO 9001:2015.
				406-D.4	Understand the techniques of TQMEX model, Japanese 5-S practice, Quality control circles, Business process Re-engineering.
				406-D.5	Understand the nature and application of Six Sigma Terminology.
				406-D.6	Understand the nature and application of Kaizen Terminology.
				406-D	
MBA-II	IV	MBA	ICT & Business Application	406-G.1	Understand the nature of ICT.
				406-G.2	Understand the different segments of business for IT application.
				406-G.3	Understand the application of Information and Communication Technology in business.
				406-G.4	Understand the development and Management of information systems in business.
				406-G.5	Understand the functions of Information Systems w.r.t. Library Management, Sales/Purchase Order processing, Inventory system, Admission system, Hospital Management, Hotel Management and Online Stores.
				406-G.6	Analyze and Examine the aspects of ICT through case study.

Class	Semester	Program	Name of the Subject	CO	Course Outcome
				406-G	
MBA-II	IV	MBA	Case Studies in Financial Management	407-A.1	Analyze and Evalute the problems based on capital budgeting.
				407-A.2	Analyze the financial position of given company using ratio analysis.
				407-A.3	Analyze and Evalute the problems based on working capital management, Inventory cost management and Debtors Management.
.				407-A.4	Analyze and Evalute the problems based on Budgets, Standard Costing and marginal costing.
				407-A.5	Analyze and Evalute the problems based on Cost of Capital, Leverage and Capital Structure.
				407-A.6	Analyze and Evalute the problems based on Cash Flow Statement, Funds Flow statement and EOQ.
				407-A	
MBA-II	IV	MBA	Case Studies in Marketing	407-B.1	Analyze and examine the aspects of Product and Brand Management through Case studies.
				407-B.2	Analyze and examine the aspects of Consumer Behavior & Service Marketing through Case studies.
				407-B.3	Analyze and examine the aspects of Sales and Distribution through Case studies.
				407-B.4	Analyze and examine the aspects of Global Marketing Management through Case studies.
				407-B.5	Analyze and examine the aspects of Marketing Research & Business Analytics through Case studies.
				407-B.6	Analyze and examine the aspects of Retail Management & Digital Marketing through Case studies.
				407-B	
MBA-II	IV	MBA	Case Studies in HRM	407-C.1	Analyze and examine the aspects of Industrial Relations and Labour Welfare through case studies.
				407-C.2	Analyze and examine the aspects of Human Capital Management and Development through case studies.
				407-C.3	Analyze and examine the aspects of Strategic HRM through case studies.
				407-C.4	Analyze and examine the aspects of Labour Law through case studies

Class	Semester	Program	Name of the Subject	CO	Course Outcome
				407-C.5	Analyze and examine the aspects of Performance and Compensation Management through case studies.
				407-C.6	Analyze and examine the aspects of I-HRM through case studies.
				407-C	
MBA-II	IV	MBA	Case Studies in Production & Op. Mgt	407-D.1	Understand the aspects of Production and Operation Management through case study.
				407-D.2	Understand the aspects of Logistic & Supply Chain Management through case study.
				407-D.3	Understand the aspects of Operation Research through case study.
				407-D.4	Understand the aspects of Industrial Productivity Management through case study.
				407-D.5	Understand the aspects of Quality Management through case study.
				407-D.6	Understand the aspects of Manufacturing and Process Management through case study.
				407-D	
MBA-II	IV	MBA	Software Project Management	407-G.1	Understand the nature and activities of Software Project Management.
				407-G.2	Understand the steps in Software Project Management Process.
				407-G.3	Understanding the requirement specification of software development.
				407-G.4	Understand the major tools of analysis & design.
				407-G.5	Understand the quality assurance in software project management.
				407-G.6	Understand the project implementionation, administrative closure and project evaluation.
				407-G	
MBA-II	IV	MBA	Project Report & Viva-Voce	408.1	Define the objectives of survey / project study in clear and concise manner.
				408.2	Formulate the clear research methodology using relevant technical terms, tools and steps.
				408.3	Cite substantial current and good quality literature.
				408.4	Interpret the results along with validity thereof.
				408.5	Prepare the project report as per the standard format.
				408.6	Suggest the appropriate measures to solve the underlying problem in research work.
				408	