



PO/PSO/CO

Department of Civil Engineering

Program Outcomes

1. **Engineering knowledge:** Apply the knowledge of mathematics, science, engineering fundamentals, and an engineering specialization to the solution of complex engineering problems.
2. **Problem analysis:** Identify, formulate, review research literature, and analyze complex engineering problems reaching substantiated conclusions using first principles of mathematics, natural sciences, and engineering sciences.
3. **Design/development of solutions:** Design solutions for complex engineering problems and design system components or processes that meet the specified needs with appropriate consideration for the public health and safety, and the cultural, societal, and environmental considerations.
4. **Conduct investigations of complex problems:** Use research-based knowledge and research methods including design of experiments, analysis and interpretation of data, and synthesis of the information to provide valid conclusions.
5. **Modern tool usage:** Create, select, and apply appropriate techniques, resources, and modern engineering and IT tools including prediction and modeling to complex engineering activities with an understanding of the limitations.
6. **The engineer and society:** Apply reasoning informed by the contextual knowledge to assess societal, health, safety, legal and cultural issues and the consequent responsibilities relevant to the professional engineering practice.
7. **Environment and sustainability:** Understand the impact of the professional engineering solutions in societal and environmental contexts, and demonstrate the knowledge of, and need for sustainable development.
8. **Ethics:** Apply ethical principles and commit to professional ethics and responsibilities and norms of the engineering practice.
9. **Individual and team work:** Function effectively as an individual, and as a member or leader in diverse teams, and in multidisciplinary settings.
10. **Communication:** Communicate effectively on complex engineering activities with the engineering community and with society at large, such as, being able to comprehend and write effective reports and design documentation, make effective presentations, and give and receive clear instructions.
11. **Project management and finance:** Demonstrate knowledge and understanding of the engineering and management principles and apply these to one's own work, as a member and leader in a team, to manage projects and in multidisciplinary environments.
12. **Life-long learning:** Recognize the need for, and have the preparation and ability to engage in independent and life-long learning in the broadest context of technological change.

PROGRAM SPECIFIC OUTCOMES (PSOs)

1. Function as design consultants in construction industry for the design of civil engineering structures.
2. Provide sustainable solutions to the Civil Engineering Problems.
3. Providing concrete solution to environmental problem.

FIRST SEMESTER B. E.

Basic Civil Engineering



After studying this subject, the students will be able to	
C101.1	Know the scope of civil engineering in various fields and understand and describe the basic terms related to survey, planning, and construction of infrastructure.
C101.2	Understand and define the terms related to water and waste water generation and treatment
C101.3	Understand and explain the basic terms related to water resources and its management
C101.4	Understand the concept of green building and define the terms related to its rating and certification.
SECOND SEMESTER B. E.	
Engineering Mechanics	
After studying this subject, the students will be able to	
C202.1	Acquire the basic knowledge of resolution of various forces acting on the rigid bodies.
C202.2	Understand and analyze the effect of forces on the rigid bodies with the help of various laws and theories.
C202.3	Explain and draw the effect of forces on rigid bodies.
C202.4	Apply the basic knowledge obtained in engineering mechanics in solving the engineering problems.
Engineering Mechanics (Practical)	
After the conduction of practical's will be able to perform the test to:	
C202.1	Perform the test to ascertain the equilibrium of a body under various systems of forces.
C202.2	Perform the tests to understand the terminology related to simple lifting machine, friction, mass moment of inertia.
C202.3	Calculate and draw a graphical solution to problems of equilibrium.
THIRD & FOURTH SEMESTER B. E. CIVIL	
BECVE301T Mathematics - III	
After studying this subject, the students will be able to	
C301.1	The students would be able to solve numerical on Fourier Series & partial differential equations.
C301.2	The students would be apply partial differential equations in column buckling problems, behavior of structures subjected to dynamic loads and in unsteady flow problems in fluid mechanics.
C301.3	The students would be apply problems related to finite element analysis using calculus of variations
C301.4	The students would be able to analyze structures for static and dynamic loads using matrices and Eigen value.
C301.5	There are several applications of Numerical methods using computers especially in structural and Fluid Mechanics where classical solutions are tedious.
C301.6	The students would be able to optimize the recourses using simplex methods of linear programming.
BECVE302T Strength of Materials	
After studying this subject, the students will be able to	
C302.1	Understand the behavior of materials under different stress and strain conditions.
C302.2	Calculate & draw shear force and bending moment diagram for beams under loading conditions.
C302.3	Analyze the bending stress, shear stress, torsion, tension & deflection of beam under different loading conditions.
C302.4	Evaluate principal stresses and strains.
BECVE302P Strength of Materials (Practical)	
After the conduction of practical's will be able to perform the test to:	
C302.1	Understand the concept and application of various types of strain gauges.
C302.2	Perform various tests and evaluate different engineering properties of engineering materials by performing different test on it.
C302.3	Obtain a graphical solution to SFD & BMD problems for simple beams.
BECVE303T Environmental Engineering – I	
After studying this subject, the students will be able to	
C303.1	Understand the function of various units of water supply scheme and apply the knowledge in planning and design of water supply system.
C303.2	Calculate the capacity of water supply scheme.
C303.3	Have the basic knowledge related to the water conveyance systems and the appurtenances used.
C303.4	Have knowledge of characteristics of water, drinking water standards and necessity of treatment.
C303.5	Design various units of conventional water treatment plant.
C303.6	Have the basic knowledge related to generation, collection, treatment disposal of solid waste.



BECVE 303 P Environmental Engineering – I (Practical)	
After the conduction of practical's will be able to perform the test to:	
C303.1	Perform different tests to ascertain physical, chemical and biological characteristic of given water sample.
C303.2	Understand the importance of levels of BOD & COD in a waste water treatment and know various methods to determine the same.
C303.3	Understand and visualize the working of various units of Water Treatment Plant during the visit and can write a report.
BECVE304T Engineering Geology	
After studying this subject, the students will be able to	
C304.1	Understand the origin of various types of minerals & rocks and describe their fundamental properties.
C304.2	Understand and explain the terms related to structural, mineral geology and geomorphology.
C304.3	Identify and describe dip, strikes, folds and faults
C304.4	Understand the basic terms related to the earthquake and assess the safety civil engineering structures in different seismic zones.
C304.5	Apply the basic knowledge of engineering geology in assessing the suitable site for civil engineering projects like dams, tunnels.
C304.6	Understand importance of geo-hydrological and geo-physical information of area in planning the civil engineering structure.
BECVE 304P Engineering Geology (Practical)	
After the conduction of practical's will be able to perform the test to:	
C304.1	Identify the rocks and minerals based on the knowledge of its fundamental properties.
C304.2	Identify dip and strike folds and faults and can show it on the maps.
C304.3	Understand and visualize the geological phenomenon during the visit and can write a report.
BECVE305T Concrete Technology	
After studying this subject, the students will be able to	
C305.1	Have the knowledge of types, properties and role of different constituents of concrete like cement, fine and coarse aggregate, water, etc.
C305.2	Understand and explain the batching, mixing, production, transportation and placement of concrete to achieve the desired results.
C305.3	Analyze and explain the properties of fresh and hardened concrete.
C305.4	The students will acquire the knowledge and describe the strength and durability of concrete.
C305.5	Understand the properties of admixtures and describe its application in various situation and requirement in concrete construction.
C305.6	Assess the strength of concrete based on the fundamental knowledge of nondestructive testing.
BECVE 305P Concrete Technology (Practical)	
After the conduction of practical will be able to perform the test to:	
C305.1	Perform different tests on cement, coarse and fine aggregate to ascertain the properties useful in production of good concrete and do the actual mix design of concrete
C305.2	Perform the tests on hardened concrete to understand and know its compressive strength variation.
C305.3	Ascertain the quality of concrete by performing non-destructive testing of the existing concrete.
BECVE401T Structural Analysis – I	
After studying the subject, the students will be able to	
C401.1	Understand the concept of determinate and indeterminate structure.
C401.2	Understand the effect of moving load and can analyze and draw the influence line diagrams.
C401.3	Understand and apply different methods and theorems in the analysis of various structures
C401.4	Compute the effect of vertical loads on beams, columns and arches and understand the phenomenon related to it.
C401.5	Understand the concept of degree of freedom and slope deflection and can apply the knowledge in analyzing the frames.
C401.6	Understand the basics matrix method of analysis of structures.
BECVE 401P Structural Analysis – I (Practical)	
After the conduction of practical will be able to perform the test to:	
C401.1	Apply the knowledge of different methods of analysis of structures to analyze the structural elements.
C401.2	Use the understanding obtained in theorems & principles of analysis of structure and verifies the same experimentally.
C401.3	Understand the working principle and use of Strain gauges and Poloriscope in structural analysis.



BECVE402T/3CE04T Geotechnical Engineering -I	
After studying the subject, the students will be able to	
C402.1	Understand the origin of soil and to identify different types of soil.
C402.2	Define and determine the index and engineering properties of the soil
C402.3	Apply the knowledge of soil properties in determining the suitability of foundation for a particular type of soil.
C402.4	Understand the concept of seepage and permeability of soil and classify its suitability in various engineering works.
C402.5	Evaluate the shear stresses and strength of the soil mass.
C402.6	Understand the concept of compressibility of soil using compaction and consolidation process.
BECVE402P/3CE04P Geotechnical Engineering -I (Practical)	
After the conduction of practicals will be able to perform the test to:	
C402.1	Identify and classify soil based on engineering properties of soil.
C402.2	Understand and determine the density and shear strength parameters of soil of a soil using various tests
C402.3	Understand the use of different charts for classifying soil or knowing the stress under the soil.
BECVE403T/5CE04T Transportation Engineering – I	
After studying the subject, the students will be able to	
C403.1	Exhibit the knowledge of planning, design and construction practices in highway & bridge engineering.
C403.2	Acquire the knowledge of geometric design and the fundamental properties of highway materials and draw appropriate conclusion.
C403.3	Understand and use the concept of different methods in design, construction, inspection and maintenance of the pavement.
C403.4	Undertake various Traffic studies and apply the knowledge in planning and design of pavement and geometrics
C403.5	Understand and describe the terms related to bridge and hydrological parameters of importance in bridge design.
C403.6	Understand the explain different sub-structures and super-structures of a bridge and its construction, inspection and maintenance.
BECVE403P/5CE04P Transportation Engineering – I (Practical)	
After studying the subject, the students will be able to	
C403.1	Understand the classification and strength parameters of sub-grade soil through various tests.
C403.2	Acquire the knowledge about different physical and engineering properties of aggregates by performing different test on road aggregates.
C403.3	Understand the various properties of bitumen material by performing various tests on it.
BECVE404T/4CE05T Surveying – I	
After studying the subject, the students will be able to	
C404.1	Understand and apply the temporary and permanent adjustments in the field survey.
C404.2	Make use of knowledge regarding various survey instruments in measuring the distances and angles and also to compute levels of different works.
C404.3	Apply the knowledge in preparing various types of maps.
C404.4	Use the knowledge to estimate the quantity (areas and volumes) of the Civil Engineering work.
C404.5	Undertake various civil engineering surveys work
C404.6	Make use of plain table survey in reproducing the site features on paper.
BECVE404P/4CE05P Surveying – I (Practical)	
After studying the subject, the students will be able to	
C404.1	Exhibit the knowledge of working and uses of various survey instruments.
C404.2	Take the measurement, record the measurement and perform the calculations by applying necessary adjustments.
C404.3	Collect the surveyed data and to compute the area traverse using various instruments.
BECVE 405 T Building Construction and Material	
After studying the subject, the students will be able to	
C405.1	Identify components of a building.
C405.2	Identify, classify & compare types of building materials.
C405.3	Select appropriate material for building construction.
C405.4	Understand the requirement of various building components and take-up the planning, design and construction related activities with their quality control.



C405.5	Select, plan and provide the suitable types doors and window at appropriate locations.
C405.6	Select suitable type of formworks, scaffolding and shoring under different work conditions.
FIFTH & SIXTH SEMESTER B. E.	
BECVE501T Structural Analysis -II	
After studying this subject, the students will be able to	
C501.1	Understand the concept of basic terminologies related to structural analysis.
C501.2	Apply the different methods of analysis of frames in practical problems
C501.3	Formulation of stiffness matrix, transformation matrix, and load matrix for various structural components for analysis purposes.
C501.4	Understand & use the basics of finite element method in the analysis of structural components.
C501.5	Understand & use the concepts related to structural dynamics.
C501.6	Understand the use of applicable software in structural analysis.
BECVE501P Structural Analysis -II (Practical)	
After the conduction of practicals will be able to perform the test to:	
C501.1	Apply practical knowledge of structural software, in analysis and design of structural components.
C501.2	Understand basics of stiffness matrix, for the evaluation of displacement, moments etc.
C501.3	Apply the knowledge into evaluation of appropriate solution to engineering problems with the help of software and modern tools.
BECVE502T Reinforced Cement Concrete Structures (RCC)	
After studying this subject, the students will be able to	
C502.1	Understand the basic concepts of structural design Methods of RCC to the practical problem
C502.2	Understand the composite action of reinforced steel and concrete in reinforced concrete structural members
C502.3	Use the knowledge of the structural properties of materials i.e. steel and concrete in assessing the strength.
C502.4	Use the knowledge in structural planning and design of various components of buildings.
C502.5	Apply the concepts and applications of prestressed concrete in real problems
BECVE502P Reinforced Cement Concrete Structures (RCC) (Practical)	
After the conduction of practicals will be able to perform the test to:	
C502.1	Apply the knowledge in actual structural design for various buildings.
C502.2	Make use of structural design knowledge in reading and understanding the professional RCC drawing and draw an appropriate conclusion.
C502.3	Understand the implementation of working drawing and write a report during the visit to any construction site.
BECVE503T T Fluid Mechanics-I (Theory)	
After studying this subject, the students will be able to	
C503.1	Measure and determine fluid pressures and forces on plates/surfaces, pipe bends, etc.
C503.2	Apply the principles of hydrostatics and determine the forces
C503.3	Apply the Bernoulli's equation to solve the problems in fluid.
C503.4	Understand the basic concepts related to laminar and turbulent flow
C503.5	Apply the knowledge of various instruments in flow measurement & its control
C503.6	Understand the concepts of dimensional analysis use the dimensionless number suitably also Understand the basic concepts related to laminar and turbulent flow
BECVE503 P Fluid Mechanics-I (Practical)	
After the conduction of practicals will be able to perform the test to:	
C503.1	Determine the discharge of Venturimeter , Orifice meter, Rectangular Notch, Triangular Notch
C503.2	Determine the coefficient of velocity and the coefficient of contraction of the orifice and mouth piece.
C503.3	Knowledge of laminar flow, turbulent flow & Reynolds number
BECVE504T Geotechnical Engineering -II	
After studying this subject, the students will be able to	
C504.1	Use the knowledge of different soil exploration techniques to ascertain the properties of soil
C504.2	Analyze the stability of natural slopes, safety & sustainability of the slopes ,design of retaining structures, reinforced earth walls, etc.
C504.3	Implement the Practices of Ground Improvement Techniques.
C504.4	Design the shallow& deep foundation.
BECVE505T Hydrology & Water Resources	
After studying the subject, the students will be able to	



505.1	Use of knowledge of basics of hydrology in calculating infiltration, evaporation, total runoff.
505.2	Use the techniques of the Hydrographs to forecast flood discharge at various durations.
505.3	Apply the Statistical techniques to analyze the flood occurrence & frequency.
505.4	Use the knowledge pertaining to the flood to plan flood routine & emergency plans
505.5	Apply the knowledge of geo-hydrology terms in planning, assessing & computation of ground water potential and its assessment using various techniques.
505.6	Take-up planning of water resources mini project.
BECVE506P Communicative English & Technical Writing	
After studying this subject, the students will be able to	
C506.1	Use functional grammar
C506.2	Write at work, draft reports and letters
C506.3	To understand the planning and procedure of carrying out research work
C506.4	Dexterous in presentation skills and participate in GD
BECVE601T Steel Structures	
After studying this subject, the students will be able to	
C601.1	Apply the knowledge of structural properties in assessing its strength for the construction purpose.
C601.2	Analyze the steel structural components by using various techniques.
C601.3	Make use of understanding and knowledge of analysis in structural planning and design of various buildings components.
C601.4	Use computer techniques to analyze the steel components of a building
BECVE601P Steel Structures (Practical)	
After the conduction of practicals will be able to perform the test to:	
C601.1	Able to calculate axially loaded member by tensions and compression members.
C601.2	Design of connection: Beam to beam, beam to column.
C601.3	Design of column & its components.
BECVE602T/SCE01T Surveying-II	
After studying this subject, the students will be able to	
C602.1	Carry forward the concepts of basic surveying techniques
C602.2	Operate various survey instruments effectively with precision
C602.3	Use the different techniques in various surveying problems
C602.4	Apply the concepts of modern surveying techniques & instrumentation.
C602.5	Execute project using different surveying techniques
C602.6	Understand and make use of various photography surveys in drawing appropriate conclusion.
BECVE602P/SCE01P Surveying-II (Practical)	
After the conduction of practicals will be able to perform the test to:	
C602.1	Learn the importance of errors and precisions during the survey work.
C602.2	Handle & record measurement on instruments used in various types of surveying.
C602.3	Carry out detailed survey of an area using appropriate technique and draw topological features on the sheet.
BECVE603T Fluid Mechanics -II	
After studying this subject, the students will be able to	
C603.1	Understand the concepts related to boundary layer theory and determination of drag and lift forces.
C603.2	Apply the knowledge of theories and equations of pipe flow in analyzing and designing the pipe network systems and its components including water hammer pressures.
C603.3	Use the concepts of uniform and critical flow through open channels including design of efficient channel sections.
C603.4	Understand the different techniques of dimensional analysis and its use in model testing.
C603.5	Understand and apply basic knowledge related to Turbines & Pumps in Water Resources planning.
C603.6	Make use of specific energy concepts in the analysis of open channel flow.
BECVE603P Fluid Mechanics -II (Practical)	
After the conduction of practicals will be able to perform the test to:	
C603.1	Perform experiments to know and verify basic terminology related to fluid mechanics.
C603.2	Perform experiment to find out various hydraulic parameters for an open channel flow.
C603.3	Perform experiment on different turbines and pumps to understand its working and operational terms related to them.
BECVE604P Building Design and Drawing (Practical)	
After the conduction of practicals will be able to perform the test to:	



C604.1	Understand building bye laws & building code
C604.2	Apply the principles of building planning and design.
C604.3	To draw submission/working drawing using suitable software.
C604.4	Make use of knowledge to give layout on the field as per the plan..
C604.5	Draw simple perspective drawings.
C604.6	Understand the drawings and detailing of Building services
BECVE605T/5CE02T Environmental Engineering-II	
After studying this subject, the students will be able to	
C605.1	Use the technical terms related to water & its quality, sewage, sewer, storm water ,etc. in its hydraulic Design, construction, testing and maintenance.
C605.2	Understand and characterize the waste water sample in terms of its physical & chemical characteristics.
C605.3	Take-up the work functional planning, layout and design of components of Water Treatment and Sewage Treatment Plants.
C605.4	Prepare the plan for rural sanitation provisions, perform functional design of septic tank,
C605.5	Analyze the industrial waste water and understand the process of its treatment.
C605.6	Make use of knowledge and effect of air pollution, solid waste in planning for its prevention and control.
BECVE606P Site Visit & Mini Project (Practical)	
After the conduction of practicals will be able to perform the test to:	
C606.1	Get an idea of various project details such as contracts, layout, planning, drawing, estimates, Arbitration provision, licensee & licensor ,architects, structural designer, etc
C606.2	Get an idea of various construction equipment, manpower & techniques used at site, techniques of batching, mixing, transportation and placement of different construction materials.
C606.3	Get an overview on safety measures, basic amenities to provide, inventory control.
C606.4	Write a legible, correct and technically sound report after the visit.
C606.5	Ascertain the provisions and execution as per the working drawing.
SEVENTH & EIGHTH SEMESTER B. E. CIVIL	
BECVE701T Advanced Concrete Structures	
After studying this subject, the students will be able to	
C701.1	Understand the behavior and failure modes different concrete members
C701.2	Analyze and apply the results in designing various concrete member of structure.
C701.3	Apply the knowledge & skills in practical problems
C701.4	Understand the relevant software and use the same in analysis & design of concrete members.
BECVE701P Advanced Concrete Structures (Practical)	
After the conduction of practicals will be able to perform the test to:	
C701.1	Analyze and design various concrete member of structure.
C701.2	Understand the relevant software and use the same in analysis & design of concrete members.
C701.3	Can write a report of visit to a site of concrete construction
BECVE702T/8CE02T Estimating and Costing	
After studying this subject, the students will be able to	
C702.1	Prepare the preliminary estimate for administrative approval & technical sanction for a civil engineering project.
C702.2	Understand and write the specification of the works to be undertaken, prepare the tender & contract documents and make use of knowledge of different contract submission & opening in awarding the work to the contractor.
C702.3	Use & execute the concept of SD, EMD, MAS, Running Bill, Final Bill during the entire project
C702.4	Prepare the bar bending schedule & also be able to find the quantity of steel
C702.5	Use the technique of Rate analysis in estimating the exact cost of material & manpower and hence the entire project.& finding the rate per unit.
C702.6	Prepare the estimate the bill of quantities using different techniques of preliminary & detailed estimation of buildings & roads
BECVE702P/8CE02P Estimating and Costing (Practical)	
After the conduction of practicals will be able to perform the test to:	
C702.1	Prepare preliminary estimates and detailed estimate of the each item of the project using appropriate method and perform the rate analysis of materials and manpower to obtain exact cost of the project.
C702.2	Use the knowledge in drafting the Specification, tender notice, contract proposal, etc and prepare the bill of quantities for the project.



C702.3	Understand the term depreciation and methods of calculating it and make use of it in valuation of the building or commodity.
BECVE703T Air Pollution And Solid Waste Management (Elective-I)	
After studying this subject, the students will be able to	
C703.1	Understand different aspects of air pollutants, its sources and effects on man and materials
C703.2	Acquire the knowledge of appropriate methods and equipments available to reduce the impact of air pollution on environment.
C703.3	Understand the physical and chemical characteristics of the solid waste depending upon its sources of generation. the generation of solid waste problems arriving in handling large amount of solid waste generated, its collection and transportation, processing and will be able to design safe collection and disposal methods.
C703.4	Achieve the knowledge of classifying, collection, transportation of solid waste.
C703.5	Understand the different methods of processing of solid waste and control of its by-products
C703.6	Achieve the knowledge of disposal techniques of solid waste.
BECVE704T/5CE06T Construction Management & Law/Project Management	
After studying this subject, the students will be able to	
C704.1	Demonstrate the understanding of various types of projects, modern construction techniques and will exhibit the knowledge in construction planning, scheduling and various controls.
C704.2	Exhibit the understanding in Network Analysis using CPM & PERT
C704.3	Achieve the knowledge regarding planning, allocation, utilization, operation and costing of the resources, manpower and tools & plants for any construction projects.
C704.4	Implement the quality control aspects in planning & management, modern trends project management, application of information system in management of construction projects, safety provisions and equipments.
C704.5	Understand the legal aspects in construction projects through the understanding of various laws pertaining to civil engineering and architectural planning & sanctioning, labor & organizational welfare measure, provisions of arbitration and litigations.
C704.6	Understand the provisions of different Acts pertaining to The Environment, Forest, Water & Air Pollution for any construction activity to be undertaken.
BECVE705T/7CE03T Transportation Engineering - II	
After studying this subject, the students will be able to	
C705.1	Understand the functions of various elements of railways, airports and tunnels.
C705.2	Plan and design various elements of railways, airports and tunnels.
C705.3	Acquire knowledge of principles of traffic control in railways, airports and tunnels.
C705.4	Understand requirement, design and construction of permanent way, runway, taxiways, & tunnels.
C705.5	Achieve the understanding in the maintenance of various elements of railways, airports and tunnels.
C705.6	Know the modern tools and techniques used in construction and the maintenance of various elements of railways, airports and tunnels.
BECVE706P Industrial Case Study and Project Seminar	
After the conduction of practicals will be able to perform the test to:	
Industrial Case Study	
C706.1	Get exposed to the Civil Engineering Works in the industry and learn the practical aspects of the same.
C706.2	Write the detailed report on understanding achieved related to project planning, design, construction, and management.
C706.3	Can correlate the academic and industry based on understanding achieved during the exposure in the industry.
Project & Seminar	
C706.4	Understand the importance and role of literature available and can draw appropriate conclusion after reviewing the literature.
C706.5	Formulate the Aim and Objective of the project based on the literature survey
C706.6	Write the report and prepare the presentation and deliver the content of the work done in the project.
BECVE801T Irrigation Engineering	
After studying this subject, the students will be able to	
C801.1	Understand the importance and scope of irrigation engineering
C801.2	Understand the methods and efficiencies of irrigation, crop water requirement.



C801.3	Acquire the knowledge in planning, design and operation of storage reservoir and make use of it in the practical situation.
C801.4	Understand the basic profile of dams and use the knowledge in checking stability of various types of dams
C801.5	Know the theories of Canal design and apply the concept to design lined and unlined canals and detailed out the cross sections.
C801.6	Solve water logging problems and provide the appropriate solution to it.
BECVE802T Pavement Analysis And Design (Elective-II)	
After studying this subject, the students will be able to	
C802.1	Understand the characteristics & structural action of different types of pavement.
C802.2	Understand and evaluate the various parameters important for the design of flexible and rigid pavement.
C802.3	Analyze and design Flexible pavement and under different loading conditions using various techniques.
C802.4	Analyze and design Rigid pavement and under different loading conditions using various techniques.
C802.5	Propose a framework for pavement management system.
C802.6	Acquire the knowledge of pavement testing and evaluation and make use of it in strengthening, repairs, maintenance and rehabilitation of pavements.
BECVE803T Water And Waste Water Treatment (Elective - III)	
After studying this subject, the students will be able to	
C803.1	Understand the composition of typical municipal solid wastes, their sources, collection, treatment and disposal.
C803.2	Attain the ability to use the techniques, skills, and modern engineering tools necessary for environmental engineering practices.
C803.3	Understand the stages and process of waste water treatment
C803.4	Understand the use and working of various units of water treatment plant.
C803.5	Make use of the knowledge related to WTP in the design of different units of water & waste water treatment plant.
C803.6	Acquire the knowledge of recent development in water & waste water treatment .
BECVE803P Water And Waste Water Treatment (Elective - III) (Practical)	
After the conduction of practicals will be able to perform the test to:	
C803.1	Know various water and waste water parameter.
C803.2	Perform various tests on different samples of water and waste water to ascertain the presence of impurities so as to evaluate the quality of water.
C803.3	Make use of the knowledge to Design individual units of a WTP.
BECVE804T Construction Economics and Finances	
After studying this subject, the students will be able to	
C804.1	Acquaint with various economic and financial aspects of construction industry
C804.2	Understand the tools and techniques of economic analysis for improving their decision making skills.
C804.3	Understand the knowledge of economics and finance with special reference to construction industry.
C804.4	Understand the concept of IRR, turnkey construction projects
C804.5	Apply knowledge of inflation, recession, financial ratios.
BECVE805P Project	
After the conduction of practicals will be able to perform the test to:	
C805.1	Understand the collection and analysis of data related to project work and apply the knowledge in actual work of the project
C805.2	Present the results obtained and write the inference of the results with scope of the work.
C805.3	Write the report and prepare the presentation and deliver the content of the work done in the project.



DEPARTMENT OF ELECTRONICS & TELECOMMUNICATION ENGINEERING

Program Outcomes

1. The program is targeted at developing the following competencies, skills and abilities amongst students. At the end of the program students shall be able to:
2. Apply knowledge of mathematics, science & generic engineering skills and core knowledge of electronics and telecommunication to practical engineering systems
3. Identify, formulate and solve electronics & communication engineering problems using appropriate tools and standards of electronics and telecommunication engineering.
4. Design electronic systems, components or processes to meet desired needs within realistic constraints considering social, cultural and public health issues.
5. Investigate complex problems and use appropriate research methodologies, including design and conduct of experiments, and to analyze and interpret data to provide conclusions.
6. Use the techniques, skills, and modern engineering tools necessary for engineering practice.
7. Understand the impact of engineering solutions in a global and societal context.
8. Understand the impact of engineering solutions in economic, environmental sustainability.
9. Demonstrate professional and ethical behavior.
10. Function as an individual or leader in multidisciplinary teams in projects implementation.
11. Communicate effectively verbally and in writing and make presentations.
12. Demonstrate knowledge & understanding of project management and finance and apply these two projects as individual, team member or leader.
13. Engage in life-long learning and adapt to rapidly changing technologies.

PROGRAM SPECIFIC OUTCOMES (PSOs)

PSO 1- A graduate of Electronics and Telecommunication Engineering should have an ability to design and implement complex systems in areas like signal processing, embedded systems, VLSI and Telecommunication Systems.

PSO 2- A graduate of Electronics and Telecommunication Engineering should have an ability to make use of acquired technical knowledge for qualifying in competitive examinations at various levels.

Course Outcomes

FIFTH & SIXTH SEMESTER B. E.	
BEETE501T Antenna & Wave Propagation	
After studying this subject, the students will be able to	
C501.1	Describe transmission line characteristics.
C501.2	calculate antenna parameters (radiation pattern, beam width, lobes, directivity, gain, impedance, efficiency, polarization)
C501.3	Analyze wire antennas (monopoles, dipoles, and loops).
C501.4	Analyze and design antenna arrays.
C501.5	Describe the operation of aperture and reflector antennas.



C501.6	Analyze and design Microstrip antennas.
BEETE502T Microprocessor and Microcontroller	
After studying this subject, the students will be able to	
C502.1	Describe internal organization of 8086/8088 microprocessors & 8051 microcontrollers.
C502.2	Describe the concept of addressing modes and timing diagram of Microprocessor.
C502.3	Interface 8086 & 8051 with Keyboard/ Display, ADC/DAC, Stepper motor etc.
C502.4	Demonstrate the concept of interrupts and its use.
C502.4	Interface various hardware with microprocessor.
BEETE502P Microprocessor and Microcontroller (Practical)	
After the conduction of practicals will be able to perform the test to:	
C502.1	Demonstrate the concept of Assembly languages structure and programming.
C502.2	Interface various peripherals with 8086 and 8051
C502.3	Simulate the programs on different software platforms.
BEETE503T Analog Circuits and Design (Theory)	
After studying this subject, the students will be able to	
C503.1	Describe the basic differential Amplifier using transistor and its operation & characteristic.
C503.2	Design linear Op-Amp circuits such as Voltage follower, Summing amplifier, scaling and averaging amplifier, Instrumentation amplifier circuits for various practical applications.
C503.3	Design non-linear Op-Amp such as Comparators, Comparator IC such as LM 339, Schmitt trigger, multivibrator circuits for various practical applications using IC555.
C503.4	Analyze and design amplifier circuits, oscillators, Filter, regulated power supply
C503.5	Analyze and design oscillators & Function generator:
C503.6	Analyze and design Design of Filters & Drivers
BEETE503 P Analog Circuits and Design (Practical)	
After the conduction of practicals will be able to perform the test to:	
C503.1	Gain a sound understanding of the operation, analysis and design of analog electronic circuits and systems
C503.2	Design linear and nonlinear applications of operational amplifier.
C503.3	Design the oscillators and other complex circuits using op amp ICs.
C503.4	Demonstrate the gain-bandwidth concept and frequency response of basic amplifiers.
BEETE504T Communication Electronics	
After studying this subject, the students will be able to	
C504.1	Demonstrate a basic understanding of the term bandwidth and its application in communications.
C504.2	Describe quantizing and PCM signals, bandwidth and bit rate calculations, study amplitude and angle modulation and demodulation of analog signals etc.
C504.3	Solve the problems involving bandwidth calculation, representation & Generation of an AM sine wave
C504.4	Compare different modulation techniques of Generation of FM (Direct & Indirect Method)
C504.5	Identify, formulate & solve communication engineering problems
BEETE504 P Communication Electronics (Practical)	



After the conduction of practicals will be able to perform the test to:	
C504.1	Demonstrate different modulation techniques used in electronic communication system.
C504.2	Use the modulation techniques and modern communication tools necessary for various engineering applications.
C504.3	Evaluate fundamental communication system parameters, such as bandwidth power, signal to quantization noise ratio, data rate etc.
BEETE505T Industrial Economics and Entrepreneurship Development.	
After studying the subject, the students will be able to	
C505.1	Define and explain concepts and laws related to demand analysis and also solve problems of elasticity of demand.
C505.2	Define and explain concepts and laws related to production and also solve problems of BEP and Depreciation
C505.3	Define and Explain the terms related to share market & some concepts of macroeconomics like inflation, deflation, stagflation and the types of market structure.
C505.4	Tell about the concept of creativity, Innovation, Invention, Discovery, Creativity and laws related to IPR and patent
C505.5	Explain the basics of entrepreneurship and Small Scale Industries.
C505.6	Explain the financial agencies and entrepreneurship support Government system & Agencies and Analyze the factors governing to project selection.
BEETE601T TELECOMMUNICATION SWITCHING SYSTEMS	
After studying this subject, the students will be able to	
C601.1	Describe the need for switching systems and their evolution from analogue to digital.
C601.2	Describe the Public Switched Telephone Network.
C601.3	Describe private networks. 4. Describe integrated networks.
C601.4	Understand & use the basics of finite element method in the analysis of structural components.
BEETE602T DIGITAL SIGNAL PROCESSING	
After studying this subject, the students will be able to	
C602.1	Represent discrete-time signals analytically and visualize them in the time domain.
C602.2	Meet the requirement of theoretical and practical aspects of DSP with regard to sampling and reconstruction.
C602.3	Design and implement digital filter for various applications.
C602.4	Describe the various transforms for analysis of signals and systems.
C602.5	Describe the concept of multi rate signal processing and how to apply it for the wavelet transform.
BEETE602P DIGITAL SIGNAL PROCESSING(Practical)	
After the conduction of practicals will be able to perform the test to:	
C602.1	Analyze and process the signals in the discrete domain.
C602.2	Design the filters to suit requirements of specific applications.
C602.3	Apply the techniques, skills, and modern engineering tools like MATLAB and digital processors.
BEETE603T CONTROL SYSTEM ENGINEERING	



After studying this subject, the students will be able to	
C603.1	Analyze various control systems.
C603.2	. Represent the mathematical model of a system.
C603.3	. Determine the response of different order systems for various step inputs.
C603.4	Analyze the stability of the system using Root locus. Bode plot, Nyquist plot.
C603.5	Obtain transfer function of systems using signal flow graph.
C603.6	Apply the state variable approach in design.
BEETE604T DIGITAL COMMUNICATION	
After studying this subject, the students will be able to	
C604.1	Explain the working principles of basic building blocks of a digital communication system.
C604.2	Describe a random process in terms of its mean and correlation functions and characterize special Gaussian and Rayleigh distributions.
C604.3	Explain receiver techniques for detection of a signal in AWGN channel
C604.4	Describe digital modulation techniques.
C604.5	Demonstrate the concept of coding and decoding techniques.
C604.6	Model digital communication systems using appropriate mathematical techniques.
BEETE602P DIGITAL SIGNAL PROCESSING(PRACTICAL)	
After the conduction of practicals will be able to perform the test to:	
C604.1	Describe the concept of the digital communication based design for testing and analyze the circuits.
C604.2	Design and conduct experiments for testing digital communication circuits and systems.
C604.3	Analyze the different coding technique for design and modeling of digital communication Identify, formulate and solve digital communication circuits and systems problems.
BEETE605T Functional English	
After studying this subject, the students will be able to	
C605.1	To understand Functional Grammer
C605.2	To understand English for Competitive Exams & Interview Techniques
C605.3	To understand Formal Correspondence, Analytical comprehension,
C605.4	To understand Technical & Scientific Writing
BEENE606P Electronics Workshop Practice (Practical)	
After the conduction of practicals will be able to perform the test to:	
C606.1	Use DSO and Spectrum Analyzer.
C606.2	. Interface peripherals with computer.
C606.3	Design PCB using PCB designing software
C606.4	Design & fabricate mini project.
SEVENTH & EIGHTH SEMESTER B. E. Electronics & Telecommunication	
BEETE701T: DSP PROCESSOR & ARCHITECTURE	
By the end of the course, the students shall be able	
C701.1	To describe the detailed architecture, addressing mode, instruction sets of TMS320C5X



C701.2	To write program of DSP processor.
C701.3	To design & implement DSP algorithm using code composer studio
C701.4	To design decimation filter and interpolation filter.
BEETE701P: DSP PROCESSOR AND ARCHITECTURE (Practical)	
The students shall be able to	
C701.1	Understand the architecture of TMS and Motorola Processors.
C701.2	Implement different processing algorithms on DSP processors
C701.3	Design different types of filters and study their characteristics
BEETE702T: TELEVISION AND VIDEO ENGINEERING	
By the end of the course, the students shall be able	
C702.1	Analyze and understand colour T.V. System
C702.2	Understand fundamental techniques of Different T.V. standards
C702.3	Understand Advanced T.V. Technology
C702.4	Understand different video recording, display and its consumer application.
BEETE702P : TELEVISION AND VIDEO ENGINEERING (Practical)	
The students shall be able to	
C702.1	Study and classify the concept of troubleshoot and repair
C702.2	Develop an understanding of electronics, mechanical and environmental factors involved in maintaining television equipment
C702.3	Analyze and synthesize TV Pictures, Composite Video Signal, TV Receiver Picture Tubes
BEETE703T: OPTICAL COMMUNICATION	
By the end of the course, the students shall be able	
C703.1	learn the basic elements of optical fiber
C703.2	understand the different kinds of losses, signal distortion in optical wave guides & other signal degradation factors
C703.3	classify various optical source materials, LED structures, LASER diodes
C703.4	learn the fiber optic receivers such as PIN, APD diodes, receiver operation & performance
C703.5	understand the operational principal of WDM, SONET, measurement of attenuation, dispersion, refractive index profile in optical fibers.
BEETE704T: Advanced Digital System Design	
By the end of the course, the students shall be able	
C704.1	Design of combinational & sequential circuit.
C704.2	Develop skilled VLSI front end designers
C704.3	Implementation of digital system
C704.4	Experimentation on Hardware /Software co-design
BEECE704P: Advanced Digital System Design (Practical)	
The students shall be able to	
C704.1	To model, simulate, verify the digital model with hardware description language
C704.2	To design and prototype with programmable logic devices
C704.3	To learn the modular design style to create large digital logic circuits.
C704.4	To create and simulate basic circuit modules (or macros) using VHDL.
BEETE705T : ELECTIVE 1 - FUZZY LOGIC & NEURAL NETWORK	



By the end of the course, the students shall be able	
C705.1	Understand the adequate knowledge about feedback neural networks
C705.2	Understand the concept fuzzy logic control to real time systems
C705.3	provide adequate knowledge about fuzzy set theory
C705.4	provide comprehensive knowledge of fuzzy logic control and adaptive fuzzy logic
C705.5	study and understand defuzzification techniques
C705.6	Understand and design genetic fuzzy controller.
BEETE705T : ELECTIVE 1 - MICROELECTROMECHANICAL SYSTEMS AND SYSTEM ON CHIP	
By the end of the course, the students shall be able	
C705.1	Understand working principles of currently available microsensors, actuators used in Microsystems
C705.2	Apply scaling laws that are used extensively in the conceptual design of micro devices and systems
C705.3	Understand the basic principles and applications of micro-fabrication processes, such as photolithography, ion implantation, diffusion, oxidation, CVD, PVD, and etching.
C705.4	Choose a micromachining technique, such as bulk micromachining and surface micromachining for a specific MEMS fabrication process
C705.5	Consider recent advancements in the field of MEMS and devices
BEETE801T MICROWAVE & RADAR ENGINEERING	
After studying this subject, the students will be able to	
C801.1	Understand the use of active and passive microwave devices
C801.2	Analyze Different UHF components with the help of scattering parameter
C801.3	Understand micro strip lines MIC design
C801.4	Understand the use of different Klystrons
C801.5	Analyze the different power distribution Tees
C801.6	Analyze Scattering Matrix of different UHF components
BEETE801T MICROWAVE & RADAR ENGINEERING (Practical)	
After the conduction of practicals will be able to perform the test to:	
C801.1	Study the characteristics of Klystron Tube and to determine its electronic tuning range.
C801.2	To study the V-I characteristics of Gunn Diode
C801.3	Study of a network analyzer and measurements using it
BEENE802T COMPUTER COMMUNICATION NETWORK	
After studying this subject, the students will be able to	
C802.1	Understand the requirement of theoretical & practical aspect of computer network.
C802.2	Understand the network traffic in computer network.
C802.3	Describe various protocols used in network.
C802.4	Describe the concept of computer network sec.
C802.5	Understand the different wired & wireless LAN stds.& Routers.
BEENE802P COMPUTER COMMUNICATION NETWORK (Practical)	
After the conduction of practicals will be able to perform the test to:	
C802.1	Understand and select various cables and connectors used for networking.



C802.2	Establish peer to peer computers as well as Local Area Network connectivity.
C802.3	Effectively use available networking tools in Computer Communication Network.
BEETE803T WIRELESS & MOBILE COMMUNICATION	
After studying this subject, the students will be able to	
C803.1	Design a model of cellular system communication and analyze their operation and performance.
C803.2	Quantify the causes and effects of path loss and signal fading on received signal characteristics.
C803.3	To construct and analyze the GSM system
BEETE804T WIRELESS SENSOR NETWORK - II	
After studying this subject, the students will be able to	
C804.1	Demonstrate advanced knowledge and understanding of the engineering principle of sensor design, signal processing, established digital communications techniques, embedded hardware and software, sensor network architecture, sensor networking principles and protocols.
C804.2	Demonstrate a computing science approach, in terms of software techniques, for wireless sensor networking with emphasis on tiny sensors, sensor specific programming languages, RFID technology, embedded architectures, software program design and associated hardware, data fusion.
C804.3	Demonstrate knowledge of the associated business, legislative, safety and commercial issues; future technological advances and the way these will impact on the engineering product enterprise process.
BEETE804T EMBEDDED SYSTEMS (Elective-II)	
After studying this subject, the students will be able to	
C804.1	Design embedded based system
C804.2	Design embedded system based on RTOS and communication protocols.
BEETE804T DIGITAL IMAGE PROCESSING (Elective-II)	
C804.1	Have an appreciation of the fundamentals of Digital image processing including the topics of filtering, transforms and morphology, and image analysis and compression.
C804.2	Implement basic image processing algorithms in MATLAB
C804.3	Have the skill base necessary to further explore advanced topics of Digital Image Processing
C804.4	Make a positive professional contribution in the field of Digital Image Processing
BEETE804T ARTIFICIAL INTELLIGENCE (Elective-II)	
After studying this subject, the students will be able to	
C804.1	Understand the history, development and various applications of artificial intelligence.
C804.2	Familiarize with propositional and predicate logic and their roles in logic programming.
C804.3	Understand the programming language Prolog and write programs in declarative programming style.
BEETE805T ROBOTICS & AUTOMATION (Elective-III)	
After studying this subject, the students will be able to	
C805.1	Explore 8051 microcontroller architecture
C805.2	Effectively utilize instruction set for assembly language programming
C805.3	Interface different on & off chip peripherals with 8051 using C language
C805.4	Basics of 8051 can be used for robotic applications



BEETE805T SATELLITE COMMUNICATION

C805.1	Do research with capabilities in the design, development and manufacture of satellite communication systems used in a wide spectrum of applications.
C805.2	Experience real world experience from household appliances to sophisticated satellite communication, from electronic ignition to neural networks and signal processing chips & to integrate academic discipline with project-based engineering applications, classroom learning theory
C805.3	Able for Acquisition of technical competence in specialized areas of Satellite Communication engineering
C805.4	Able to identify, formulate and model problems and find Satellite Communication engineering solutions based on a system approach.

BEETE805T CMOS VLSI DESIGN

After the conduction of practicals will be able to perform the test to:

C805.1	Design PMOS and NMOS transistor. 2. 3. . 4.
C805.2	Implementation different combinational logic circuits.
C805.3	Design layout for various circuits
C805.4	Design CMOS transistor.

BEETE806P Project

After the conduction of practicals will be able to perform the test to:

C806.1	Understand the collection and analysis of data related to project work and apply the knowledge in actual work of the project
C806.2	Present the results obtained and write the inference of the results with scope of the work.

DEPARTMENT OF INFORMATION TECHNOLOGY

Program Outcomes

At the end of this program graduate should be able to:

1. **Engineering knowledge:** Apply the knowledge of mathematics, science, engineering fundamentals, and an engineering specialization to the solution of complex engineering problems.
2. **Problem analysis:** Identify, formulate and analyze real world problems to reach substantial conclusions using computer science and engineering concepts.
3. **Design/development of solutions:** Design a system component and process to meet desired needs.
4. **Conduct investigations of complex problems:** use research based knowledge and methods including design , interpretation of data ,analysis & synthesis of the information to provide valid conclusion.
5. **Modern tool usage:** apply appropriate techniques, resources, and modern engineering and IT tools including prediction and modeling to complex engineering activities with an understanding of the limitations.
6. **The engineer and society:** communicate effectively both in written & oral formats
7. **Environment and sustainability:** Understand the impact of professional engineering solutions in societal and environmental contexts.
8. **Ethics:** Demonstrate professional skills and ethics.



9. **Individual and team work:** Function effectively as an individual, and as a member or leader in diverse teams, and in multidisciplinary settings.
10. **Communication:** Ability to communicate effectively with peer community and society on complex software/system engineering activities through unambiguous spoken language, written reports, presentations.
11. **Project management and finance:** Ability to apply the knowledge of Engineering and Management principles to manage projects as a team member or leader in multidisciplinary teams.
12. **Life-long learning:** Recognize the need for, and have the preparation and ability to engage in independent and life-long learning in the broadest context of technological change.

PROGRAM SPECIFIC OUTCOMES (PSOs)

A graduate of the Computer Science and Engineering Program will demonstrate:

PSO1: To demonstrate knowledge and understanding of IT engineering concepts and apply these to the industries.

PSO2: The ability to understand, analyse and develop computer programs in the areas related to algorithms, system software, multimedia, web design, big data, analytics, and networking for efficient design of computer-based system of varying complexity.

PSO3: The ability to employ modern computer languages, environments, and platforms in creating innovative career paths to be an entrepreneur, and a zest for higher studies.

List of Course Outcome

BEIT301T APPLIED MATHEMATICS- III	
C0301.1	Student can identify Laplace transforms & inverse Laplace transforms of various types of function, its properties and apply it to solve differential equation and are able to use in engineering Problems.
C0301.2	Students can use Fourier Transforms and its inverse in practical applications, problems for the wave or diffusion equations can be solved easily using the Fourier Transform.
C0301.3	Student are capable to find the Z- Transform, inverse Z-Transforms of a sequence, identify its region of convergence and develop an ability to solve problems in various branches of Engineering.
C0301.4	Student can determine eigen values and eigen vector sand These solution of line are differential equation using matrix method and student to apply concept of matrices and its application for solving engineering problems.
C0301.5	One can obtain random variables corresponding to random experiments; Specify probability density and cumulative distribution functions for both discrete and continuous random variables. Calculate the distributions for functions of random variables.
C0301.6	The mathematical expectation enables us to learn and apply a shortcut formula for the variance, deviation, std. deviation . Also it is used to find moments, moment generating functions using shortcut method for various applications.
BEIT302T-PROGRAMMING LOGIC DESIGN IN 'C'	
C0302.1	Understand the basics of computer programming and write, compile, debug programs in C language. Also Use different data types, decision structures and loops in a computer program.



C0302.2	Understand and apply the in-built functions and customized functions for solving the problems and apply the pointers, memory allocation techniques ,Arrays, Searching & Sorting.
C0302.3	Understand concept of String, string library functions, Structures and Union.
C0302.4	Understand & Evaluate File Handling and Command Line Argument in C.
C0302.5	Understand memory allocation functions as well as Graphic's functions to implement
C0302.6	Learn about Bios functions and Terminate and Stay resident program.
BEIT303T-ETHICS IN IT	
C0303.1	Understand the importance of ethics for business, IT professionals and IT users and to evaluate ethical principles in IT sectors.
C0303.2	Evaluate various aspects of cyber crime and identify causes, types and responses on cyber crime.
C0303.3	Identify and summarize key issues of privacy and freedom of expression.
C0303.4	Understand about intellectual property and its different aspects and issues.
C0303.5	Illustrate the ethical culture of IT organizations and analyze the role of workers in that.
C0303.6	Analyze the impact of Information Technology on Quality of life, health care domain.
BEIT304T-Digital Electronics and fundamental of microprocessor	
C0304.1	Able to Convert decimal number into binary, octal and hexa decimal system and also to apply them for real life problems. Minimize the digital circuits by simplification of the expression using Boolean algebra.
C0304.2	Analyze the working of Multiplexers, Demultiplexer, Encoders, Decoders, Code Converters, Adders, Subtractor (Half, Full),BCD Adder/ Subtractor
C0304.3	Able to understand the working of FlipFlops
C0304.4	Design ,Analyze the working of , Registers, Counters,
C0304.5	Able to understand PLA, PAL, Architecture of 8085 MP and its instruction set.
C0304.6	Able to understand interrupt structure and timing diagrams of 8085,
BEIT305T-Data Communication	
C0305.1	Study about communication model, data representation and analyze the data flow in a data communication system.
C0305.2	To learn about protocol and network addressing and be able to explain the principles of a layered protocol architecture.
C0305.3	Estimate types of signals with conversion techniques; Understand the importance of transmission modes and to prepare mathematical background for communication signal analysis.
C0305.4	Design and Enhance various multiplexing, conversion techniques and switching networks.
C0305.5	Evaluate building blocks of digital communication media; analyze error performance of data in presence of noise and other interferences. Study about satellite communication.
C0305.6	The Unit contents include protocols and equipment in communications network such as the Internet, local area networks and wide area networks. It provides both practical and general knowledge of communication
BEIT306T-ENVIRONMENTAL ENGINEERING	
C0306.1	Understand key current environmental problems
C0306.2	Be able to identify and value the effect of the pollutants on the environment: atmosphere, water and soil.
C0306.3	Be able to analyse an industrial activity and identify the environmental problems.
C0306.4	Be able to select the most appropriate technique to purify and/or control the emission of pollutants.
C0306.5	Be able to apply the basis of an Environmental Management System (EMS) to an industrial activity
C0306.6	Be able to plan strategies to control, reduce and monitor pollution.
BEIT401T Discrete Mathematics and Graph Theory	



C0401.1	Students will be able to describe several areas of mathematics beyond calculus , express their interest in mathematics ,understand why mathematical thinking is valuable in daily life and solve equations and inequalities both algebraically and graphically.
C0401.2	Students will be able to compute the Cartesian product of sets , find the domain , co-domain and range of a relation. Drawthe graphs of various types of realtions and perform the algebraic operations on real functions.
C0401.3	The study of group theory aims to introduce students to some more sophisticated concepts , results as an essential part of general mathematical culture and as a basis for further study of more advanced mathematics
C0401.4	To know concepts from the theory of rings such as zero divisor, division rings and fields which form the essentials of the mathematicsLattice is an introduction to partiallyordered sets. A knowledge of Boolean algebra serves two main purposes: firstly,to describe and define the function of alogic circuit; and secondly by simplifying the Boolean expression defining a particular circuit, one can simplify orreduce the associated hardware.
C0401.5	Students will be able to model and solve real-world problems using graphs and trees, both quantitatively and qualitatively.
C0401.6	Students will be able to apply diverse counting strategies to solve varied problems involving strings, combinations, distributions, partitions and analyze combinatorial, algebraic, inductive, formal proofs of combinatoric identities.
BEIT402T Algorithm and Data Structures	
C0402.1	Understand the importance of algorithm, data structure & their basic usability in application
C0402.2	Describe & implement the basic concept & terminology of linear data structure like stack & Queue
C0402.3	Use the link list data structure for solving various application depending on various behavioral properties
C0402.4	Select and use the appropriate non linear data structure (tree) for problem solving and programming
C0402.5	Ability to apply and implement graph concept to solve real time problem
C0402.6	Apply algorithm for solving problem like sorting, searching ,insertion and deletion of data.
BEIT403T Theory of Computation	
C0403.1	Understand basic properties of formal languages and formal grammars, deterministic and nondeterministic finite automata
C0403.2	Understand the relation between types of languages and types of finite automata
C0403.3	Design grammars and recognizers for different formal languages
C0403.4	Understand basic properties of Turing machines and computing with Turing machines
C0403.5	Determine the decidability and intractability of computational problems
C0403.6	Understand Recursive Function: Basic functions and operations on them
BEIT404T Computer Architecture and Organization	
C0404.1	Ability to understand basic Architecture of computer and its basic unit and internal structure.
C0404.2	Ability to perform computer arithmetic operations and Master the binary and hexadecimal number systems including computer arithmetic
C0404.3	Ability to design memory organization that uses storage for different word size operations and different page replacement policies.
C0404.4	Ability to understand the concept of I/O organization and cache mapping techniques.
C0404.5	Ability to understand control unit operations
C0404.6	We will learn verity of hardware and software techniques that allow us to take advantage of instruction level parallelism to fully utilize the potential of the functional units
BEIT405T Object Oriented Methodology	



C0405.1	To prepare and implement object-oriented design for small/medium scale problems
C0405.2	Understand how object-oriented concepts are incorporated into the programming Language
C0405.3	Understand the concept of class and object. Implement the constructor and destructor.
C0405.4	To understand the concept of inheritance and its types.
C0405.5	To understand the concept of polymorphism and types of polymorphism, virtual function.
C0405.6	Implement friend function. Apply file handling concept and implement various functions.
BEIT501T SYSTEM PROGRAMMING	
C0501.1	To understand the basics of system programs like editors, compiler, assembler, linker, loader, interpreter and MACRO.
C0501.2	To understand & Design of object code generation through translator (assembler)
C0501.3	To Understand the interlinking functions in program with MACRO & its processing.
C0501.4	To understand how linker and loader create an executable program from an object module created by assembler and compiler.
C0501.5	To understand the various phases of compiler and compare its working with assembler.
C0501.6	To understand the various drivers in UNIX and difference between Unix and Windows operating system.
BEIT502T DESIGN AND ANALYSIS OF ALGORITHMS	
C0502.1	Students will be able to define the various recurrence relation methods and complexity.
C0502.2	Students will be able to define the various algorithm analysis methods.
C0502.3	Students will be able to estimate the asymptotic time complexities of various recurrence relations.
C0502.4	Students will be able to choose the appropriate method to solve the recurrence relations
C0502.5	Students will be able to distinguish and give examples for the different types of algorithm development strategies.
C0502.6	Students will be able to describe the use of P, NP, polynomial reduction, NP-hardness, and NP-Completeness.
BEIT503T Software Engineering	
C0503.1	Knowledge about the software engineering process, its importance and its characteristics.
C0503.2	Study of various quality analysis parameters and their techniques of implementation.
C0503.3	Study of various approaches of modeling and analysis & Knowledge about the basic concepts of system engineering and requirement engineering.
C0503.4	Study of design engineering strategies and their key components.
C0503.5	Knowledge of software Testing and its importance and Knowledge of Various key of software testing.
C0503.6	Study of risk analysis, Knowledge about quality management strategies, change handling and reengineering concept.
BEIT504T COMPUTER GRAPHICS	
C0504.1	To understand the basic terminology used in computer Graphics.
C0504.2	To understand and explain Scaling, rotation, translation, rotation about arbitrary point, reflections, shearing. To learn about polygon filling techniques.
C0504.3	To use geometric transformations on graphics objects and their application in composite form.
C0504.4	To understand about the concept segmentation and windowing and clipping techniques.
C0504.5	Understanding the different methods used for curves and surfaces.



C0504.6	To understand and use the different color models, color applications and Animation
BEIT505T Java Programming	
C0505.1	Understand OOPs concepts, Java programming constructs and JVM and byte codes
C0505.2	Knowledge of the structure and model of the Java programming language
C0505.3	Able to write Simple java programs using Classes, Inheritance, Exception handling and applets.
C0505.4	Develop programs using thread concepts and swings
C0505.5	Develop simple Java application in the Java programming language
C0505.6	Propose the use of certain technologies by implementing them in the Java programming language to solve the given problem
BEIT506T INDUSTRIAL ECONOMICS AND ENTREPRENEURSHIP DEVELOPMENT	
C0506.1	To understand the functional areas of accounting, marketing, finance, and management. Understand the local business environment and growth analysis
C0506.2	Understanding how to use economic problem solving skills and to discuss the opportunities and challenges of the increasing globalization of the world economy.
C0506.3	To understand market investment strategies .
C0506.4	To understand how to use knowledge of key leadership concepts.
C0506.5	To understand how to identify the most recognized sources of funding. financing for business start-ups
C0506.6	To apply decision-support tools to business decision making. business decision making.
BEIT601T COMPUTER NETWORKS	
C0601.1	Understand the basics of computer network & network architecture
C0601.2	Demonstrate the various types of data link layer protocol
C0601.3	Understand the various types of routing protocol and IP addressing
C0601.4	Outline the mechanisms involved in transport layer & in application layer
C0601.5	Trace the flow of information from one node to another node in the network
C0601.6	Understand the concept of network security & internet security
BEIT602T OPERATING SYSTEM	
C0602.1	Students will be able to define the basic concepts of operating system
C0602.2	Students will be able to define file management and identify the different disk scheduling algorithms and check their efficiency
C0602.3	Students will be able to define process, differentiate and give examples for the different process scheduling algorithms in operating system.
C0602.4	Students will be able to choose efficient memory management techniques used in different operating system
C0602.5	Students will be able to correlate the different types of process synchronization methods that can be used in solving classical problems.
C0602.6	Graduates will be able to define solutions for dead lock problems like its detection and avoidance and their comparative application scenarios
BEIT603T Database Management Systems	
C0603.1	To explore the various models of DBMS and levels in the architecture of DBMS.
C0603.2	Relate the problems in day to day life by implementing the Entity relationship model and understanding queries in terms of relational algebra.
C0603.3	To be competent in use of Structured Query Language SQL
C0603.4	Understand the various database optimization techniques.
C0603.5	Face and resolve the crash in database system.
C0603.6	Implement transactions, concurrency control, and be able to do Database recovery



BEIT604T Internet Programming	
C0604.1	Understand HTML web development markup language
C0604.2	Design and develop interactive, client-side, executable web applications
C0604.3	Learn the skills and use of XML for storing and transporting data
C0604.4	To acquire the knowledge of server side programming with dynamic websites by Learning of client side and server side programming.
C0604.5	Describe Web development process and various server-side technologies and Develop JSP applications using JSP life cycle.
C0604.6	Describe Android features and development environment for implementing android applications.
BEIT605T Functional English	
C0605.1	Students have better reading comprehension, pronunciation, and functional English grammar.
C0605.2	Students are able to write letters and resumes
C0605.3	Students are able to organize their thoughts for Effective presentation and writing.
C0605.4	Students are able to learn skills to present themselves well in an interview, and handle a Group Discussion.
BEIT701T Data Warehousing and Mining	
C0701.1	To analyse and design a data warehouse for any organization.
C0701.2	To describe the aspect of data preprocessing.
C0701.3	To understand and apply knowledge of multidimensional schemes suitable for data warehousing.
C0701.4	To understand and apply the concept of datamining .
C0701.5	To understand the concept of association rules.
C0701.6	To understand and design Business intelligence system.
BEIT702T Computer System Security	
C0702.1	Understands the basic concept of Cryptography and Network Security, their models and Algorithms.
C0702.2	Understand the basic concept of Crypt analysis attack, to provide security from Crypt analysis attack study various Algorithms and mathematical models.
C0702.3	To get aware of public key cryptography by studying various algorithms.
C0702.4	Understand the basic concept of Encryption and Authentication with the help of various applications and their working.
C0702.5	Acquire knowledge of Email service and key management by studying various protocols.
C0702.6	To get aware of web security, Network security, virus, worms and firewall by studying various network layers and the supportive protocols at each network layer.
BEIT703T ARTIFICIAL INTELLIGENCE	
C0703.1	Analyze AI problems with respect to several problem characteristic
C0703.2	Understand the concepts of heuristic search Techniques.
C0703.3	Solve knowledge representation Issues
C0703.4	Understand Natural language processing and its Application
C0703.5	Design the Expert system for a given problem.
C0703.6	Understand the concept of Fuzzy logic and Bayes theorem.
BEIT704T1 Elective-I Mobile Computing	
C0704.1	To provide the student with an understanding of the Cellular concept, Frequency reuse, Hand-off strategies.
C0704.2	To provide the student with an understanding of Equalization and diversity reception techniques
C0704.3	To give the student an understanding of digital cellular systems (GSM, GPRS, WAP, cdma2000, and W-CDMA)
C0704.4	To illustrate architecture and protocols in pervasive computing and
C0704.5	To design successful mobile and pervasive computing applications and services
C0704.6	To give practical experience in the area through the design and execution of a



	modest research project
BEIT704T2 Elective-I Multimedia Systems	
C0704.1	Students will be able to describe the fundamentals used in multimedia and to some extent be able to compare and evaluate them.
C0704.2	To understand about data compression techniques, image compression techniques like JPEG, video compression techniques like MPEG, and the basic concepts about animation.
C0704.3	Students will be able to explain about the technology necessary for creating multimedia content for the web, video, DVD, 2D and 3D graphics, sound and programming
C0704.4	Students can apply the knowledge, techniques, skills and modern tools to become successful professionals in communication and Media industries
C0704.5	Students will be able to work and interact, through hands-on experiences, to design, develop, and modify electronically generated imagery using a wide range of sophisticated graphical tools and techniques
BEIT704T3 Elective-I Bio-informatics	
C0704.1	Assess the role of information technology in the formation and use of knowledge.
C0704.2	Compare and contrast various technology and data resources needed for retrieving, storing, analyzing, managing, and communicating information for the delivery of nursing and healthcare.
C0704.3	Integrate information technology (IT) culture, processes, roles, related terminology, and applications in the practice of nursing.
C0704.4	Simulate participation as a team member in the Bio-informatics life cycle.
C0704.5	Evaluate issues for security standards of automated applications in healthcare, including strategies to secure healthcare information from internal and external risks and threats.
C0704.6	Demonstrate how to provide consumers and healthcare institutions with information to access, evaluate, and use electronic healthcare information and resources.
BEIT704T4 Elective-I Compiler Design	
C0704.1	To understanding of design issues associated with operating systems.
C0704.2	To know issues related to file system interface and implementation, disk management.
C0704.3	To understand various process management concepts including scheduling, synchronization.
C0704.4	To learn about memory management including virtual memory.
C0704.5	To study system resources sharing among the users.
C0704.6	Be familiar with protection and security mechanisms and deadlock handling.
BEIT705T1 Elective-II Software Testing and Quality Assurance	
C0705.1	Knowledge of software Testing and its importance. Knowledge of Various key elements required for software testing.
C0705.2	Unit testing concepts, Types of unit testing and Knowledge about Tools for unit testing
C0705.3	Basic working for control flow analysis and Various criteria for control flow testing.
C0705.4	Knowledge about integration of modules in software engineering and their testing. Types of interfaces in integration and their fundamentals.
C0705.5	Knowledge about various types of tests, Documentations details and principals for preparing documentation
C0705.6	Knowledge about user level testing and various standards for software quality assurance
BEIT705T2 Cluster and Grid Computing (Elective II)	
C0705.1	Explore the area of Cluster Computing with fundamental details.
C0705.2	Understand high availability, simulation model and process scheduling for cluster technology; learn various case studies of cluster system.



C0705.3	Learn and design,architectureandtopologiesofgrid computing.
C0705.4	Understandtraditionalparadigmsfordistributed computing and web services.
C0705.5	Understand semantic grid and autonomic computing.
C0705.6	KnowthebasicservicesincludingGridsecurity,Grid monitoring, Grid scheduling.
BEIT705T3 Elective-II Digital Signal Processing	
C0705.1	To develop skills for analyzing and synthesizing algorithms and systems that process discrete time signals, with emphasis on realization and implementation.
C0705.2	Represent discrete-time signals analytically and visualize them in the time domain.
C0705.3	Understand the meaning and implications of the properties of systems and signals.
C0705.4	Understand the Transform domain and its significance and problems related to computational complexity.
C0705.5	Be able to specify and design any digital filters using MATLA
BEIT705T4 Elective-II Digital Forensic for Information Technology	
C0705.1	Assess many of the opportunities and challenges associated with digital information systems that you have not
C0705.2	seen before and explain them to those who have less technical background than you
C0705.3	Actively contribute to discussions about design, maintenance and changes to the information systems that
C0705.4	support digital collections for which you are responsible
C0705.5	Read and understand the information technology trade press, recognizing opportunities and strategic implications
C0705.6	for the management of digital collections
C0705.7	Contribute substantive recommendations for policies related to the management of digital collections
BEIT801T Distributed Systems	
C0801.1	Understand , fundamental principles of Distributed Systems
C0801.2	Understands the message communication, remote procedure call and Remote method invocation (RPC and RMI) along with group communication.
C0801.3	Apply the concepts of process for real time applications
C0801.4	Implement and analyze deadlock conditions for various applications.
C0801.5	Design a distributed shared memory system.
C0801.6	To understand file system along with concepts of CORBA RMI.
BEIT802T Gaming Architecture and Programming	
C0802.1	Strong technical skills suitable for professional programming roles in the game industry.
C0802.2	Specialist knowledge in computer graphics, AI, physics and audio.
C0802.3	The ability to design and build game engines from scratch in industry standard languages, including C++.
C0802.4	Knowledge of the games development process, including the pitch, design, and use of a game engine to build a demo.
C0802.5	Experience of the planning, management and execution of a major games technology project.
BEIT803T1 Elective-III Embedded Systems	
C0803.1	To introduce the embedded Hardware and Interfacing.
C0803.2	To make the students familiar with software development & tools for embedded systems.
C0803.3	The objective of the course is to cover the Hardware Design, Software Development & RTOS for the Embedded Systems.
BEIT803T2 Elective-III Digital Image Processing	
C0803.1	Understand the mathematical foundations for digital image representation, image acquisition, image transformation, and image enhancement.
C0803.2	Understand the mathematical principles of image restoration, image compression, and image segmentation.
C0803.3	develop a theoretical foundation of fundamental concepts of digital image



	processing.
BEIT803T3 Elective-III Pattern Recognition	
C0803.1	Explain and compare a variety of pattern classification, structural pattern recognition, and pattern classifier combination techniques.
C0803.2	Summarize, analyze, and relate research in the pattern recognition area verbally and in writing.
C0803.3	Apply performance evaluation methods for pattern recognition, and critique comparisons of techniques made in the research literature.
C0803.4	Apply pattern recognition techniques to real-world problems such as document analysis and recognition.
C0803.5	Implement simple pattern classifiers, classifier combinations, and structural pattern recognizers.
BEIT803T4 Elective-III Machine Learning	
C0803.1	To understand the basic building blocks and general principles that allow one to design machine learning algorithms
C0803.2	To become familiar with specific, widely used machine learning algorithms
C0803.3	To learn methodology and tools to apply machine learning algorithms to real data and evaluate their performance
BEIT804T1 Elective-IV Cyber Security	
C0804.1	To understand the concept of cyber space, netizens and various types of cyber crimes.
C0804.2	To study Legal aspects of E-Commerce, IPR and Domain Name resolution.
C0804.3	Discuss scope and limitations of IT Act of India
BEIT804T2 Elective-IV Cloud Computing	
C0804.1	Understand cloud computing concept and a systematic knowledge of the fundamental technology and characteristics.
C0804.2	Learn the main concepts of cloud computing services and virtualization technology.
C0804.3	Explore and understand various cloud platforms and web services provided by Google, Amazon and Microsoft.
C0804.4	Learn the broad approaches to cloud migration and various applications of Cloud.
C0804.5	Identify and understand the core issues of cloud computing such as security and storage.
C0804.6	Learn various cloud computing tools and future cloud.
BEIT804T3 Elective-IV E-Commerce and Enterprise Resource Planning	
C0804.1	Understand concept of Ecommerce and its types.
C0804.2	Be familiarized with technologies for Ecommerce. & Understand different types of Online Payment systems.
C0804.3	Understand various E-business Strategies.
C0804.4	To comprehend the technical aspects of ERP systems
C0804.5	To understand concepts of reengineering and how they relate to ERP system implementations
C0804.5	To understand the steps and activities in the ERP life cycle & able to identify and describe typical functionality in an ERP system
BEIT804T4 Elective-IV Wireless Sensor Networks	
C0804.1	To Understand the basic WSN technology and supporting protocols, with emphasis placed on standardization basic sensor systems and provide a survey of sensor technology
C0804.2	Understand the medium access control protocols and address physical layer issues
C0804.3	Learn key routing protocols for sensor networks and main design issues
C0804.4	Learn transport layer protocols for sensor networks, and design requirements
C0804.5	Understand the Sensor management, sensor A11
Project	
C0805.1	Deepened their knowledge in IT generally, and their major specifically.
C0805.2	Worked as a part of a team to achieve a multi-faceted set of outcomes in a realistic



	business environment
CO805.3	Encountered scheduling and scope issues that they needed to manage using professional project management techniques

DEPARTMENT OF ELECTRICAL ENGINEERING

Program Outcomes

1. **Engineering knowledge:** Apply the knowledge of mathematics, science, engineering fundamentals, and an engineering specialization to the solution of complex engineering problems.
2. **Problem analysis:** Identify, formulate, review research literature, and analyze complex engineering problems reaching substantiated conclusions using first principles of mathematics, natural sciences, and engineering sciences.
3. **Design/development of solutions:** Design solutions for complex engineering problems and design system components or processes that meet the specified needs with appropriate consideration for the public health and safety, and the cultural, societal, and environmental considerations.
4. **Conduct investigations of complex problems:** Use research-based knowledge and research methods including design of experiments, analysis and interpretation of data, and synthesis of the information to provide valid conclusions.
5. **Modern tool usage:** Create, select, and apply appropriate techniques, resources, and modern engineering and IT tools including prediction and modeling to complex engineering activities with an understanding of the limitations.
6. **The engineer and society:** Apply reasoning informed by the contextual knowledge to assess societal, health, safety, legal and cultural issues and the consequent responsibilities relevant to the professional engineering practice.
7. **Environment and sustainability:** Understand the impact of the professional engineering solutions in societal and environmental contexts, and demonstrate the knowledge of, and need for sustainable development.
8. **Ethics:** Apply ethical principles and commit to professional ethics and responsibilities and norms of the engineering practice.
9. **Individual and team work:** Function effectively as an individual, and as a member or leader in diverse teams, and in multidisciplinary settings.
10. **Communication:** Communicate effectively on complex engineering activities with the engineering community and with society at large, such as, being able to comprehend and write effective reports and design documentation, make effective presentations, and give and receive clear instructions.



11. **Project management and finance:** Demonstrate knowledge and understanding of the engineering and management principles and apply these to one's own work, as a member and leader in a team, to manage projects and in multidisciplinary environments.

12. **Life-long learning:** Recognize the need for, and have the preparation and ability to engage in independent and life-long learning in the broadest context of technological change.

PROGRAM SPECIFIC OUTCOMES (PSOs)

1. To develop capabilities to face the challenges in industry through industry institute interaction.
2. To identify, formulate, analyze and solve the complex engineering problems in thermal, design and industrial domain.

List of Course Outcome

BE ME- III T Applied Mathematics – III	
C301.1	The students would be able to solve numerical on Fourier Series & partial differential equations.
C301.2	The students would be apply partial differential equations in column buckling problems, behavior of structures subjected to dynamic loads and in unsteady flow problems in fluid mechanics.
C301.3	The students would be apply problems related to finite element analysis using calculus of variations
C301.4	The students would be able to analyze structures for static and dynamic loads using matrices and Eigen value.
C301.5	There are several applications of Numerical methods using computers especially in structural and Fluid Mechanics where classical solutions are tedious.
C301.6	The students would be able to optimize the recourses using simplex methods of linear programming.
BE ME 302T KINEMATICS OF MACHINE	
CO302.1	Understand the principles of kinematic pairs, chains and their classification, DOF & inversions
CO302.2	Analyze the planar mechanisms for position, velocity and acceleration.
CO302.3	Design cams and followers for specified motion profiles.
CO302.4	Evaluate Kinematics characteristics of gears
CO302.5	Synthesis of mechanism by graphical method.
CO302.6	Understand the concept of friction and its application like clutch , brake & dynameters etc.
BE ME 303T FLUID MECHANICS	
CO303.1	State the Newton's law of viscosity and Explain the mechanics of fluids at rest and in motion by observing the fluid phenomena.
CO303.2	Calculate force of buoyancy on a partially or fully submerged body and Analyze the stability of a floating body.
CO303.3	Derive Euler's Equation of motion and Deduce Bernoulli's equation.
CO303.4	Evaluate pressure drop in pipe flow using Hagen-Poiseuille's equation for laminar flow in a pipe.
CO303.5	Examine energy losses in pipe transitions and sketch energy gradient lines.
CO303.6	Analyze Development of Boundary Layer on a flat plate and calculate Lift and



	Drag force .
BE ME 304T MANUFACTURING PROCESSES	
CO304.1	Understand the principle and working of pattern making and moulding processes
CO304.2	Understand gating system and the principle and working of casting process
CO304.3	Understand the principle and working of various joining process
CO304.4	Understand the principle and working of various forming process
CO304.5	Understand the principle and working of various press working process
CO304.6	Understand the principle and working of various plastic manufacturing process
BEME305T ENGINEERING METALLURGY	
CO305.1	Understand the engineering material & its classification, atomic structure of metals, imperfections, mechanism of plastic deformationalloys
CO305.2	Understand Binary equilibrium diagrams, solid solutions, Iron-Iron carbide diagram, invariant reactions.
CO305.3	Understand Time-temperature transformation curves and heat treatment processes and surface hardening
CO305.4	Understand Alloy steels, Tool steels, Effect of alloying elements on properties of steels and stainless steels.
CO305.5	Understand Cast iron, their types, alloy cast iron, on ferrous alloys, brasses and bronzes
CO305.6	Remember Principles of hardness measurement, Hardness Test, Non destructive Tes, Powder metallurgy process and its applications..
BEME306P MACHINE DRAWING	
CO306.1	Outline standards for drawing sheets, name blocks, lines, section dimensioning
CO306.2	Reproduce Orthographic projections of elements.
CO306.3	Illustrate type/size and standard practices for threads, bolts, nuts, keys.
CO306.4	Reproduce assembly and dismantling, fit and tolerances.
CO306.5	Illustrate of some standard assemblies.
CO306.6	Reproduce production drawing.
BE ME 307P TECHNICAL REPORTS & SEMINAR	
CO307.1	Students will be able to familiarize themselves with new technical topics
CO307.2	students will be able to participate in technical seminars and paper contests
BEME 401T APPLIED MATHEMATICS – IV	
CO401.1	The students would be able to solve numerical on Fourier Series & partial differential equations.
CO401.2	The students would be apply partial differential equations in column buckling problems, behavior of structures subjected to dynamic loads and in unsteady flow problems in fluid mechanics.
CO401.3	The students would be apply problems related to finite element analysis using calculus of variations
CO401.4	The students would be able to analyze structures for static and dynamic loads using matrices and Eigen value.
CO401.5	There are several applications of Numerical methods using computers especially in structural and Fluid Mechanics where classical solutions are tedious.
CO401.6	The students would be able to optimize the recourses using simplex methods of linear programming.
ME 402T ENGINEERING THERMODYNAMICS	
CO402.1	Understand basic concepts of thermodynamics system, zeroth law of thermodynamics, First law of thermodynamics and ideal gas.
CO402.2	Analysis of First law of Thermodynamics for Closed System undergoing a process and cycle (Control Mass System) and Open System (Control Volume System) and Steady Flow process.



CO402.3	Analysis of Second Law of Thermodynamics, Entropy, Reversible and Irreversible Processes, Availability of the systems.
CO402.4	Calculate properties of the steam using steam table and Mollier chart.
CO402.5	Calculate the efficiency of vapour carnot cycle and rankine cycle with regeneration, superheating and reheating.
CO402.6	Estimate workdone and efficiency of otto, diesel, dual, brayton, stirling, Ericson air standard cycles.
BE ME 403T HYDRALIC MACHINE	
CO403.1	Undersatnd the Basic concept of compressible flow and impact of jet
CO403.2	To design the Elements of Hydroelectric power plant and impulse turbine.
CO403.3	To understand Reaction turbine, Kalplan Turbine and their performance characteristics.
CO403.4	To understand Hydrodynamic pump their application and their design and performance characteristics.
CO403.5	To understand Positive displacement pump, their basic principal and other miscellanies pump.
CO403.6	To understand Model testing of hydraulic machines and other water lifting devices.
BE ME 404T MACHINING PROCESSES	
CO404.1	Identify, Classify and select the tool materials , Tool Geometry, and claculate the tool's life .
CO404.2	Demostrate the operations , application and recent development of lathe machines
CO404.3	Understand the opeation , mechanism and Industrial application of shaper, slotter and,Planner.
CO404.4	Prapere the job on milling machine along with selecting of various tools and operations.
CO404.5	Identify the types of grinding machines along with advanced finishing processes.
CO404.6	Select tools and processes for drilling, riming , boring and broaching operations.
BE ME 405T MECHANICS OF MATERIAL	
CO405.1	Understand the Basic concept of simple stresses and strain.
CO405.2	Evaluate shear force, bending moment and stresses in beam.
CO405.3	Analyze deflection of beam and interpret principal plane & principal stresses.
CO405.4	Analyze Column & struts in buckling for various end conditions. Design shaft on strength and rigidity criteria under various loading.
CO405.6	Analyze fracture and strain energy under different types of loading.
CO405.5	Understanding theories of failure for static & dynamic loading.
BE ME 406T ENVIRONMENTAL STUDIES	
CO406.1	Understand important aspects in environment and natural resources
CO406.2	Understand of ecosystem, energy flow. and ecological system
CO406.3	Understand biodiversity introduction values threats to bio-diversity
CO406.4	Understand pollution definition , solid waste management, Disaster management Floods, Earth quacks, Cyclone and land slides.
CO406.5	Unsustainable to sustainable development, Environmental ethics, Preserving Resources for future generations, Environment legislations.
CO406.6	Understand Global population, Environment and human health, Human rights
ME 407P MINI PROJECT	
C407.1	Student will learn regarding fabrication/construction of a simple mechanical or electro-mechanical working model using various manufacturing processes.



C407.2	Students will be able to familiarize themselves with new technical topics
C407.3	Students participate in technical seminars and paper contests
BE ME 501T INDUSTRIAL ECONOMICS AND INDUSTRIAL DEVELOPEMENT	
CO505.1	Understant the concept of Industrial Economics and law of demand in market.
CO505.2	Expain the various financial aspects involved in manufacturing industry.
CO505.3	Define the price of the product in defferent market competition.
CO505.4	Extend innovation and creativity to Intellectual Property Rights (IPR).
CO505.5	Summarize for selecting Enterprenur as career option
CO505.6	Prepare business project report on innovative/creative idea
BE ME 502T DESIGN OF MACHINE ELEMENTS	
CO502.1	Understand principles of design, failures of the joints and its actual application in the industry.
CO502.2	Design of different types of bolted joint,welded joints and Brackets.Design of Pressure vessel
CO502.3	Design of shaft under various loading condition.Design of different types of keys.& Springs.
CO502.4	Design of power screw and screwjack.Design of different types of clutches and brakes
BE ME 503T ADVANCED PRODUCTION PROCESSES	
CO 503.1	Understand different types of non-conventional machining processes and its applications in industry
CO 503.2	Apply advanced joining processes,its classification and applications in industry.
CO 503.3	Apply advance machining processes,its classification and applications in industry.
CO 503.4	Understand Die cutting operations,equipments for sheetmetal working
CO 503.5	Apply principle of jig and fixtures its classification and applications in industry
CO 503.6	Understand principle of superfinishing processes,advantages and disadvantages and application of LASER in surface modification
BE ME 504T HEAT TRANSFER	
CO 504.1	Understand the basic modes of heat transfer. Compute temperature distribution in steady-state and unsteady-state heat conduction.
CO 504.2	Understand and analyse heat transfer through extended surfaces.
CO 504.3	Interpret and analyze forced convection heat transfer.
CO 504.4	Interpret and analyze free convection heat transfer.
CO 504.5	Understand the principles of radiation heat transfer.
CO 504.6	Design heat exchangers using LMTD and NTU methods. Basics of mass transfer.
BE ME 505T MECHANICAL MEASUREMENT AND METROLOGY	
CO 505.1	Students will appreciate/ Comprehend the importance of accuracy and its effects on results and its uncertainty. Students will describe basic concepts of mechanical measurement and errors in measurements.
CO 505.2	Students will Understand methods of measurement for various quantities like force, torque, power, displacement, velocity/seed and acceleration.
CO 505.3	Students will Understand methods of measurement for various quantities like Pressure, Vacuum, Sound, Light and Temperature. Students will select appropriate temperature measuring device for various applications
CO 505.4	Students will Understand basic concepts of Metrology ; Students will select linear measuring instrument for measurement of various components
CO 505.5	Students Interpret angular and taper measurement devices for measurement of various components
CO 505.6	Students will Identify /evaluate quality of surface produced using various



	methods , Students will discriminate capabilities of machining process by measuring surface finish of the component produced
BE ME 506T COMPUTER APPLICATIONS 1	
CO 506.1	Understand the basic Concept of C language
CO 506.2	Interprate the application of C language to Mechanical Engineering Problems
BE ME 507T INDUSTRIAL VISIT	
CO 507.1	get practical exposure and opportunities for acquiring knowledge regarding manufacturing and service industries/organizations
CO 507.2	acquaint them with industrial culture.
CO 507.3	describe the usage of different technologies/tools/concepts related to Design, operations, quality control, maintenance, automation in industries.
BE ME 601T ENERGY CONVERSION 1	
CO 601.1	Understand layout of power plant and principle, fuel, classification, components of steam generator.
CO 601.2	Calculate the chimney height, diameter, efficiency and performance of the boiler.
CO 601.3	Understand Fluidized bed boiler, coal handling, ash handling and cogeneration.
CO 601.4	Calculate maximum discharge, critical pressure ratio and effects of friction, calculation of throat and exit areas, supersaturated flow of steam Nozzles.
CO 601.5	Calculate work done, thrust and power, dimensions and proportioning of the blades, efficiencies of steam turbines.
CO 601.6	Understand quality and quantity of cooling water required, Dalton's law of partial pressure, sources of air leakages and Cooling towers.
BE ME 602T CONTROL SYSTEMS ENGINEERING	
CO602.1	Analysis of Control System components, Translational, rotational mechanical systems, Electric systems, Electronic system and Electromechanical system by using Modeling of physical system.
CO602.2	Prescribe control components and control systems using block diagrams , Signal Flow Graph by using Masons Gain Formula and transfer functions
CO602.3	Analyze systems responses for various kinds of input signals and also to analyze transient responses of simple control system
CO602.4	Experimental determination and analysis of stability, limitations. Root locus plot.
CO602.5	Determination and analysis of frequency response of control systems
BE ME 603T OPERATIONS RESEARCH	
CO603.1	Understand the concept of mathematical modeling and optimum utilization of resources by using Linear Programming Model.
CO603.2	Utilize resources effectively by using allocation technique.
CO603.3	Apply sequencing technique to reduce cycle time of the product
CO603.4	Evaluate the project by using CPM & PERT Network technique
CO603.5	Identify replacement policies for different type of items.
CO603.6	Simulate the situation of waiting line, inventory to take decision on resources planning.
BE ME 604T MECHATRONICS	
CO604.1	Understand basic mechatronics system, design, control system
CO604.2	Understand basics of microprocessor, analog electronics circuits
CO604.3	Analysis of actuatures, mechanical and electrical actuators
CO604.4	Understand basics of logic gates and digital electronics circuits
CO604.5	Understanding about PLC and programming Languages
CO604.6	Analysis of Mechtronics and example of Mechatronics System



CO606.2	2. Job Interviews 1. Interview Techniques 2. Types of interview 3. Preparing for interview
	i. In order to clear the last and the most important hurdle in placement is oral communication i.e. Interview round, this unit is designed to help the students understands the psyche of the employer and his expectation from the employee. ii. Will ensure and boost the confidence of the interviewer iii. An apt description in which the interviews are conducted and the types of interviews.
CO606.3	3. Formal Correspondence (memo form & e-mail form) 1. Job Application &Resume Writing 2. Inquiry & Quotations & Order & complaints 3. Circulars/ Notices & Memos
	i. This unit is designed to give written skills required almost in all formal correspondence. iv. This particular Unit will give an edge over the competitors and help the learners to use the most coveted style in which formal correspondences are done and required.
CO606.4	4. Analytical Comprehension 1. Fictional passages 2. Non-fictional passages
	i. This unit which will help in all Competitive exams and command over language ii. Improve the understanding and interpretative skills iii. Will enhance vocabulary iv. Will help in understanding different context and the culture or the scientific investigation behind it. v. Improve reading habits, very important skill required to learn language.
CO606.5	5. Technical Writing & Scientific Writing (Projects Proposals) 1. Technical Reports (Accident, feasibility, trouble, progress, investigation etc.) 2. Manuals
	i. In order to be proficient in working and reporting the necessary information to the Upper and Middle Management this unit will help the students understand the technicality of the formal writings as these. ii. Will help students learn how proposals are forwarded iii. Will also ensure to help to write-research papers iv. Will help students to manage Projects independently v. Will help students to become Entrepreneur
BE ME Industry Case Study	
CO608.1	Identify various industrial/organizational problems.
CO608.2	solved industrial/organizational problems using methods/techniques/theories studied in curriculum
CO608.3	Prepare technical report & present work on case study done at industry
BE ME 701T Industrial Engineering	



CO701.1	Student should be able to gain the knowledge of Productivity and its technique.
CO701.2	Student should be able to estimate of time required for completion of any activity or job.
CO701.3	Student should be able to Forecast the demand for future.
CO701.4	Student should be able to apply the Maintenance and Reliability policy.
CO701.5	Student should be able to design sampling plans and various tools for quality control.
CO701.6	Student should be able to understand advance tools of quality control.
BE ME 702T3 Automobile Engineering	
CO702.1	Understand the basic concepts of automobile, classification and its components.
CO702.2	Exposure to different types of clutches and transmission of gear box with its working and application.
CO702.3	Understand the concept of transmission system and different types of brake used in automobile.
CO702.4	Analyze the concept of linkage and steering linkage mechanism with different types used in automobile and different types of suspension system.
CO702.5	Understand the electrical system used in automobile, Classification, specification wheel and tyre.
CO702.6	Understanding of Body and Safety Considerations and Modern Developments in Automobiles
BE ME 703T Computer Aided Design	
CO703.1	Understand the fundamentals of various computer aided design Processes.
CO703.2	Understand the transformation & various transformation techniques
CO703.3	Understand the various Techniques for Geometric Modeling & Curve plotting
CO703.4	Understand the fundamentals of finite element method for shaft.
CO703.5	Understand the fundamentals of finite element method for truss & CST Element.
CO703.6	Understand the various Optimization in engineering design techniques.
BE ME 704T and BEME704P ENERGY CONVERSION - II (Theory)	
CO704.1	Design Reciprocating air compressor.
CO704.2	Compute the problems on Rotary air compressor.
CO704.3	Understand the internal combustion engine and its application.
CO704.4	Analysis of design parameter of the internal combustion engine.
CO704.5	Estimate the problems on Refrigeration System.
CO704.6	Calculate the problems on Air conditioning System.
BE ME 705T DESIGN OF MECHANICAL DRIVES	
CO705.1	Design of Coupling, Flywheel and Bearings.
CO705.2	Design of Flat belt drive, V belt drive Roller chain drive and wire rope drive.
CO705.3	Design of Spur Gear, Helical Gear and Bevel Gear Drive.
CO705.4	Design of Worm Gear Drive and I. C. Engine components,
BE ME 706T PROJECT SEMINAR	
CO706.1	students will execution to inculcate the habit of learning and work as a member of the team to achieve the final objective.
CO706.2	students will identify project topic, collection of literature, preparation with seminar delivery.schedule preparation and report
BE ME 801T Industrial Management	
CO801.1	Understanding of evolution of management thoughts and the principles of scientific management.
CO801.2	Understand the functions of personnel management and the related legislations
CO801.3	Explore the core concept in marketing, Product Life cycle, Pricing.
CO801.4	Awareness regarding concept of finance management, various sources of



	generating the finance and to understand the books of account
CO801.5	Understand the Channel of product distribution, concept of material management, Purchase function, Vender Selection, Ethics in purchasing and various codifications.
CO801.6	Get overview of the marketing function and the various sources of finance.
ELECTIVE-II BE ME 802 T5 REFRIGERATION AND AIRCONDITIONING (Theory)	
CO802.1	Student should understand the basics of various refrigeration cycles and its nomenclature.
CO802.2	Analyze the Compound Vapour Compression Refrigeration system and multiple evaporator system.
CO802.3	Compute the problems on Air cycle refrigeration & its application.
CO802.4	Understand the concepts of Basics and application of the Cryogenics.
CO802.5	Understand the various Advanced Psychometric processes & Calculate its Heat Load Calculations
BE ME 802 T2 COMPUTER INTEGRATED MANUFACTURING	
CO805.1	Understand the role of computer integrated manufacturing systems & Concurrent Engineering.
CO805.2	Prepare Manual part programming & to perform the manufacturing on CNC.
CO805.3	Form part families by using various techniques of Group Technology.
CO805.4	select and integrate process equipment for flexible manufacturing and computer integrated manufacturing systems
CO805.5	Develop Computer Aided process planning under diverse manufacturing situations
CO805.6	manage shop floor control by using CAQC, CMM, Invntory Models.
BE ME 803 T -ADVANCE INTERNAL COMBUSTION (IC) ENGINE	
CO803.1	Understand the basic concept of I.C. engine and its components.
CO803.2	Apply the concept of Automotive fuels & Fuel injection in Automobile domain.
CO803.3	Understand the Combustion in S.I. Engine.
CO803.4	Understand the Combustion in C.I. Engine.
CO803.5	Understand the Air pollution & control
CO803.6	Analysis of Engine testing and performance parameters
BE ME 804T AUTOMATION IN PRODUCTION	
CO804.1	Understand the automation which is used to increase production and types of automation.
CO804.2	Exposure and analysis of numerical control system, NC machines, CNC machines, DNC machines.
CO804.3	Understand the concept of industrial robotics robot anatomy, and robot applications etc.
CO804.4	Cultivate the understanding about automated material handling systems, automated storage and retrieval system.
CO804.5	Understand the automated inspection and group technology, machine cell design etc.
CO804.6	Learn the concept of computer aided manufacturing, computer aided process planning and flexible manufacturing system.
BE ME 805T ENERGY CONVERSION - III	
CO805.1	Analysis of the gas turbine plant and method of improvement of thermal efficiency of gas turbine plant.
CO805.2	Compute the problems on jet propulsion its applications and the operation of Nuclear Power plant.
CO805.3	Understand the solar energy and its applications.



CO805.4	Understand the energy auditing and its applications.
CO805.5	Apply the concept of Hydraulic circuit in industrial applications.
CO805.6	Apply the concept of Pneumatic Circuit in industrial applications.
ME 807P	MAJOR PROJECT
CO807.1	Students will be able to execute designed to inculcate the habit of independent learning & work on it and also in a capacity as a member of group to achieve the final intended objectives.
CO807.2	Students will be able to apply the acquired knowledge for solving real life engineering problems.
CO807.3	Students will be able to Design of some mechanical system. This may comprise of machines, thermal/hydraulic / pneumatic system, design of some small industry and like.
CO807.4	Students will be able to experimental / practical verification of some mechanical engineering systems.
CO807.5	Students will be able to study of some industry manufacturing some product. This study may comprise of various aspects such as plant layout, mechanical handling systems, assembly shop, quality control system, maintenance system, various service systems, design, development and planning functions, techno-economic studies etc., feasibility of small scale industry.
CO807.6	Application / design / analyse Software development for particular etc.

Department of Electrical Engineering

Program Outcomes

PO1	Engineering knowledge: Apply the knowledge of mathematics, science, engineering fundamentals to the solution of engineering problems.
PO2	Problem analysis: Identify, formulate, review literature, and analyze complex engineering problems using first principles of mathematics, natural sciences, and engineering sciences.
PO3	Design/development of solutions: Design solutions for complex engineering problems and design system components or processes that meet the specified needs with appropriate consideration for the public safety, societal and environmental considerations.
PO4	Conduct problem investigations: Use research-based knowledge including experimentation, analysis and interpretation of data, and synthesis of the information to provide valid conclusions.
PO5	Modern tool usage: Select, and apply appropriate techniques, resources, and modern engineering and IT tools for analyzing the engineering activities with an understanding of the limitations.
PO6	The engineer, industry and society: Apply contextual knowledge to assess industrial, societal and safety related issues and understand consequent relevance to the professional engineering practice.
PO7	Environment and sustainability: Understand the impact of the professional engineering solutions in societal and environmental contexts, and demonstrate the knowledge of, and need for sustainable development.
PO8	Ethics: Apply ethical principles and commit to professional ethics and responsibilities and norms of the engineering practice.
PO9	Individual and team work: Function effectively as an individual, and as a member



	or leader in diverse teams, and in multidisciplinary settings.
PO10	Communication: Communicate effectively on complex engineering activities such as, being able to understand and write effective reports, make effective presentations, and give and receive clear instructions.
PO11	Project management and finance: Demonstrate knowledge and understanding of the engineering and management principles and apply these to one's own work, as a member and leader in a team in multidisciplinary environments.
PO12	Life-long learning: Recognize the need for, and have the preparation and ability to engage in independent and life-long learning in the broadest context of technological change.

Program Specific Outcomes

PSO1	Students should understand the overview of Generation, Transmission and distribution of Electric Power and its control.
PSO2	Student should be able to understand Electrical power system and awareness about various equipments in the field of Electrical Engineering.
PSO3	Student should be able to use computational techniques to design and analyse Electrical systems

Course Outcome

BSEI-4T Basic Electrical Engineering	
C-I-4.1	student should be able to apply the basic laws of electric circuits to calculate the unknown quantities.
C-I-4.2	student should be able to apply the basic fundamental of magnetic circuits to calculate the unknown quantities.
C-I-4.3	student should be able to represent and interpret the sinusoidal electrical quantities mathematically to analyze the 1- phase/3-phase AC circuits to determine the unknown quantities
C-I-4.4	student should be able to understand principle, construction and working of transformer , types of transformer, phasor diagram and to determine the power losses/efficiency and voltage drop/voltage regulation.
BSEII-5T- ADVANCED ELECTRICAL ENGINEERING	
C-II-5.1	Describe the concept of electrical power generation, transmission, distribution and the understanding about conventional/renewable energy sources and recognize the necessity of electrical earthing, safety & protecting devices.
C-II-5.2	Describe the construction, principle, applications and performance characteristics of DC machines.
C-II-5.3	Study & Calculate monthly energy bill as per the tariff of power distribution Company and Recognize the electrical energy illumination sources and their selection.
C-II-5.4	Describe the construction, principle, types, applications and performance characteristics 3 phase & 1 Phase Induction motors.
BEELE302T Non Conventional Energy Source	
C302.1	Student will be able to understand about Solar radiation and able to estimate energy reaching on surface
C302.2	Student will be able to classify different solar collectors and energy storage systems.
C302.3	Student will be able to understand application of solar energy.
C302.4	Students will go through the process of Wind Energy Conversion System (WECS



).
C302.5	Students will go through the process of Ocean Thermal Energy Conversion System (OTEC).
C302.6	To get able to understand the hydro power plant and different other Non Conventional Energy sources like Biomass, MHD, Fuel cell etc.
BEELE303T Electrical Measurement and Instrumentation	
C303.1	Understand the details of different bridges used for measurement of R,L,C
C303.2	Understand the details of different electrical measuring instruments.
C303.3	Measure the electrical power and energy and use of CT, PT.
C303.4	Study the basics of transducer as well as generalized instrumentation system with the help of a block diagram
C303.5	Know the transducers and its use for measurement of force, torque, velocity, acceleration.
C303.6	Understand the basic idea about measurement of temperature, pressure & flow measurement.
BEELE304T Network Analysis	
C304.1	Apply the knowledge of source transformation and kirchoff's voltage on electrical networks.
C304.2	Apply the knowledge of kirchoff's current law for analysis of electrical circuits and conversion of circuit using duality.
C304.3	Apply various networks theorem for analysis of electrical circuits.
C304.4	Evaluate the initial conditions using knowledge of Laplace transformation and analysis of various waveforms.
C304.5	Know the Two Port network.
C304.6	Apply the knowledge of resonance for series and parallel RLC circuit and calculation of various electrical quantities for 3 phase circuits.
BEELE305T Electronic Devices & Circuits	
C305.1	Students will be able to understand principle & working of basic semiconductor devices, transistors, amplifiers, FET & MOSFETS.
C305.2	Students will be able to convert numbers from one code to other code.
C305.3	Students will be understand the basic of Logic gates and truth tables of digital circuits.
C305.4	Students will be able to understand the use of semiconductor devices in different electronic circuits.
C305.5	Students will be able to calculate different performance parameters of transistors
C305.6	Students will be able to plot and study the characteristics of semiconductor devices.
BEELE402T Elements of Electromagnetic	
C402.1	Understand the vector analysis, vector and scalars conversion for different co-ordinate systems.
C402.2	Apply Coulombs law and calculate force on steady charge and electric field intensity due to field of 'n' point charges, line charge, volume charge, etc.
C402.3	Understand and apply Gauss law and Divergence theorem to electric field intensity i.e. field of 'n' point charges, volume charge, line charge etc. and Find potential difference and potential of point charge.
C402.4	Apply effective analysis tool like Poisson's and Laplace equations to current, current density, dielectrics and capacitances, metallic conductors. Understand the nature of dielectric materials like in parallel plate capacitance, two wire line capacitance,



C402.5	Understand steady magnetic field and magnetic forces, also nature of magnetic material. Also how to apply BiotSavorts law, Ampere's circuital law and Stroke theorem to magnetic circuit.
C402.6	Understand the role of Maxwell's equation and boundary conditions:-Students can write and interpret phasor Maxwell's equations in differential and integral forms, both in time and frequency domains. Understand basics of electromagnetic waves.
BEELE403T DIGITAL AND LINEAR ELECTRONIC CIRCUITS	
C403.1	Basic fundamentals of Logic gates, Flip Flops, Timers
C403.2	Basic operational amplifier circuits.
C403.3	Simple linear circuit.
C403.4	Applications of Operational Amplifier.
C403.5	Study of linear ICS.
BEELE404T ELECTRICAL MACHINES-I	
C404.1	student should be able to understand Principle, construction, connections, vector grouping, operation and testing of 3-phase transformer.
C404.2	student should be able to understand Conversion of 3-phase supply to 2- phase supply, parallel operation of 3-phase transformer.
C404.3	student should be able to understand Principle, armature and field construction, types, operation characteristics, armature reaction, commutation, methods to improve commutation in dc generators.
C404.4	student should be able to understand Principle, types, voltage build up, performance characteristics, torque evaluation in DC motors.
C404.5	student should be able to understand Principle, construction, types, torque development, performance characteristics, tests to determine performance indices & parameters of equivalent circuit of 3-phase and double cage induction motors, methods of starting, speed control and braking of induction motors
C404.6	student should be able to understand Revolving and cross field theories, operation, characteristics, types, equivalent circuit & tests.
BEELE405T COMPUTER PROGRAMMING	
C405.1	Students should be able to understand basic structure of 'C' programming with concept of operators ,datatypes and functions.
C405.2	Students should be able to understand concept of arrayys and evaluate searching and sorting techniques using arrays.
C405.3	Student should be able to understand the concept of Sturcture ,file, and operations related to files.
C405.4	Understand the object oriented programming concept in differentiation with procedure oriented programming.
C405.5	To understand the basic environment of MATLAB ,and Student should be able to execute 'C' program on MATLAB environment.
C405.6	To understand and apply the knowledge of programming and implement it on MATLAB environment.
BEELE406T ENVIRONMENTAL STUDIES	
C406.1	The student on completion of course will understand the ecosystem.
C406.2	Environmental issues related with social and human population.
C406.3	Biodiversity and its conversion.
BEELE501T ELECTRICAL POWER SYSTEM – I	
C501.1	Understand basics of Power System.
C501.2	Modeling & representation of the system components used in power system.



C501.3	Understand use of cables in distribution network.
C501.4	Concept of designing transmission line parameters.
C501.5	The basic concept of load flow analysis.
C501.6	Analyze performance of generators & turbines.
BEELE502T UTILIZATION OF ELECTRIC ENERGY	
C502.1	Students should be able to understand Process and application of electric heating.
C502.2	Students should be able to understand Process and application of electric welding..
C502.3	Students able to design the illumination system and understand application Illumination system
C502.4	Students able to understand the process of air conditioning and Refrigeration
C502.5	Students able to understand the Different types of fan and pumps and application.
C502.6	Students able to understand the compressor and DG set
BEELE503T ELECTRICAL MACHINE DESIGN	
C503.1	Select proper material for design of a machine.
C503.2	Design an overall transformer and estimates its performance characteristics as per requirements and constraints specified.
C503.3	Design rotor core of Induction Motor.
C503.4	Design overall dimensions of synchronous machines.
BEELE504T MICROPROCESSOR & INTERFACING	
C504.1	Student should be able to use and apply VLSI circuit concept.
C504.2	Introducing to INTEL 8085A architecture.
C504.3	Programming Instructions
C504.4	Interrupts
C504.5	Methods of data transfer
C504.6	Hardware and Interface
BEELE505T Electrical Machines-II	
C505.1	Understand Principle, construction and operation of synchronous machine.
C505.2	Understand parallel operation of synchronous generators and experimental determination of parameters.
C505.3	The student has understood principle, construction, methods of starting synchronous motor, its operation with variable load, operation with variable excitation, performance evaluation.
C505.4	The student has understood special motors like Repulsion, Hysteresis, Reluctance, Universal and Schrage motors.
BEELE601T POWER STATION PRACTICE	
C601.1	Understand various sources of electrical energy and different factors related to generating stations and connected load.
C601.2	Study general layout, major equipments and auxiliaries in thermal power station.
C601.3	Learn basics of hydro power station.
C601.4	Learn basics of nuclear, power generation, co-generation, and captive power generation.
C601.5	Calculate tariff for different customers.
BEELE602T ENGINEERING ECONOMICS & INDUSTRIAL MANAGEMENT	
C602.1	The students will be able to understand the various terms of Industrial economics - Demand, Utility, Factors of Production, Market Structure.
C602.2	The students will get aware about the Banking System and Economic Policies.



C602.3	The students will be able to apply the concepts of Marketing management and Finanacial Management
BEELE603T ELECTRICAL DRIVES & THEIR CONTROL	
C603.1	To examine speed/ torque characteristics of common drive dc motor and compare behavior of dc motor during starting, running, and breaking.
C603.2	To evaluate ratings of motor for Contionous ,Intermittent and cyclic order operation.
C603.3	To Study PLC and its applications on electric drives.
C603.4	To Design the Power and Control circuits using contactors and relays
C603.5	To Select,distinguish and analyze the working of traction motors.
C603.6	To Learn the use of Digital Control of electric drives
BEELE604T POWER ELECTRONICS	
C604.1	Able to understdsnd basic operation of Silicon controlled rectifier and its application.
C604.2	Able to understdsnd operation and characteristics various power semiconductor devices
C604.3	Able to analyze and design an AC/DC rectifier circuit.
C604.4	Able to understand Application of AC-DC rectifier for speed control of Sepately excited DC motor andCycloconverter.
C604.5	Able to analyze and design DC/DC converter circuits.
BEELE605T CONTROL SYSTEM – I	
C605.1	Model the linear systems and study the control system components specifications through classical and state variable approach.
C605.2	Understand the time response and time response specifications.
C605.3	Analyze the relative stability through root locus method.
C605.4	Frequency response tools like bode plat and nyquist plot.
C605.5	Understand the introductory concepts of state variable approach.
BEELE701T CONTROL SYSTEMS –II	
C701.1	Students understood the performance Analysis of Lag, Lead and Lag-Lead compensator.
C701.2	Students able to solve various state space representations for linear systems
C701.3	Students able to analysis the Controllability and Observability of state space models and obtain SVF
C701.4	Students understood the design concept of optimal controllers for system models.
C701.5	Students able to analysis the non linear control system using the describing function analysis
C701.6	Students understood the Sampled Data Control Systems and its analysis of Stability using Bi-linear transformation & Jury's test.
BEELE702T ELECTRICAL POWER SYSTEM – II	
C702.1	Analysis of power system using symmetrical components transformation.
C702.2	Do symmetrical fault analysis.
C702.3	Do unsymmetrical fault analysis.
C702.4	Understand the concept of steady state and transient stability.
C702.5	Understand the economic scheduling of power system.
C702.6	Understand the various types of neutral grounding and compensation.
Elective- I BEELE703T (1) I.T. & ITS APPLICATIONS IN POWER SYSTEM CONTROL	



C703(1).1	Understand the communication used for automation.
C703(1).2	Understand the various aspects of energy auditing in industry
C703(1).3	Do the networking of communication in industry with instrumentation and microprocessors.
Elective- I BEELE703T (2) FUZZY LOGIC & NEURAL NETWORK	
C703(2).1	Understand the fundamentals of fuzzy logic and ANN.
C703(2).2	Learn different neural networks
C703(2).3	Learn concepts of Associative memories and self organizing network.
Elective- I BEELE703T (3) FLEXIBLE AC TRANSMISSION SYSTEMS	
C703(3).1	Understand basic concept of FACTS
C703(3).2	Understand voltage and current source converters for FACTS.
C703(3).3	Understand basic knowledge of shunt compensator.
C703(3).4	Understand basic knowledge of series compensator.
C703(3).5	Understand static voltage and phase angle regulators.
C703(3).6	Understand basic knowledge of combined series and shunt compensators.
Elective- I BEELE703T (4) ENERGY MANAGEMENT AND AUDIT	
C703(4).1	Know Present energy scenario with need of energy audit and energy conservation.
C703(4).2	Understand various aspects of energy audit and management.
C703(4).3	Understand and analyze material and energy balance and study co-generation and waste heat recovery.
C703(4).4	Understand key factors of energy action planning, monitoring and targeting.
C703(4).5	Understand and incorporate electric and thermal energy management in the industry.
BEELE 704 T HIGH VOLTAGE ENGINEERING	
C704.1	To Understand and differentiate the Breakdown mechanism in solid, liquid and gaseous medium.
C704.2	To Distinguish Lightning and switching over-voltages and protection of lines by lightning arrestors, ground wires and surge absorbers.
C704.3	To analyze behaviour of travelling waves and select appropriate insulation co-ordination.
C704.4	To Investigate and compare the generation of high voltage and current by different methods.
C704.5	To evaluate the measurement of high voltage and current by different methods in laboratories.
C704.6	To Investigate non destructive and high voltage testing of electrical apparatus by different techniques.
BEELE 705 T - ELECTRICAL INSTALLATION DESIGN	
C705.1	The students will understand concept of load forecasting, solve problems based on regression analysis.
C705.2	The students will be able to draw single line diagram with specifications for electrical distribution network for residential and commercial installations and will able to draw single line diagrams with specifications for distribution networks, motors and power control centers for industrial installations and design reactive power compensation.
C705.3	The students will be able to understand construction, types and selection of PVC/XLPE cables and overhead conductors.



C705.4	Students shall be able to design 11KV and 33KV substations for utility and industrial installations and specify the ratings and specification of apparatus used and they will be able to understand procedure for receipt, storage, testing and commissioning of transformers along with its accessories viz OTI, WTI, Silica gel breather, MOG, buchholz relay etc
C705.5	Students will be able to determine fault level at various locations in radial networks and be able to find rating and location of series reactor.
C705.6	Students will understand the relevant provisions of IE rules for low, medium and high voltage installations and will be able to understand provisions for system and equipment earthing as per IS 3043
BEELE706P PROJECT SEMINAR	
C706.1	Do literature survey using library, internet, technical journals, product catalog, datasheets etc for a defined area.
C706.2	Understand & deliver the seminar topic.
C706.3	To enhance the skills of self- study and lifelong learning.
ELECTIVE-II BEELE 801T (4) - EHV AC & HVDC TRANSMISSION	
C801(4).1	Student will be able to demonstrate the knowledge of Power handling capacity of different Transmission systems.
C801(4).2	Effect of Electrostatic and electromagnetic fields and corona due to EHVAC lines.
C801(4).3	Voltage control and current control systems for power flow controls in HVDC system.
C801(4).4	The knowledge of design parameters of AC filters as well as DC filters and Reactive power compensation.
C801(4).5	Overall knowledge about the HVDC system such as MTDC, protection and substation layout of HVDC power plant.
ELECTIVE-III BEELE 802 T (3) -POWER SEMICONDUCTOR BASED DRIVES	
C802(3).1	Understand dynamics of electrical drives.
C802(3).2	Understand and analyze the motor drives using power electronics devices.
C802(3).3	Understand and analyze AC motor using power electronic devices.
C802(3).4	Study the special motors and energy conservation in electrical drives.
C802(3).5	Understand the traction drives.
ELECTIVE-III BEELE 802 T (4) ELECTRICAL DISTRIBUTION SYSTEM	
C802(4).1	Student will able to calculate different distribution factors.
C802(4).2	Understand classification of load, types of load curves.
C802(4).3	Control of voltage and reactive power in distribution system.
C802(4).4	Understand distribution automation.
C802(4).5	Understand distribution substation layout with associated equipments.
BEELE 803 T -SWITCH GEAR AND PROTECTION	
C803.1	To Discuss Theory & application of main components used in power system protection.
C803.2	To understand and examine protection systems used for electric machines, transformers, bus-bars, transmission lines.
C803.3	To understand Theory, construction and applications of main types of circuit breakers.
C803.4	To Design the protection system needed for each main part of a power system.
C803.5	To evaluate and understand the use of comparators in protection system
C803.6	To understand and examine the different parameters of protection aspects



BEELE 804 T COMPUTER APPLICATIONS IN POWER SYSTEM	
C804.1	Students will be able to determine bus Impedance & Admittance matrix by graphically, inspection and building algorithm.
C804.2	Load flow study of a power system by Newton- Raphson and Gauss- Seidal iterative method.
C804.3	Short circuit studies.
C804.4	Transient stability by using Eulers, Modified Eulers and RK-4th order differential method.
BEELE805P PROJECT	
C805P.1	Students will be able to apply technical & Managerial skills for analysis, design, simulation & modeling of Engineering problems.
C805P.2	To learn the time & Finance management for task completion in a group with professional ethics.
C805P.3	To present their work in a professional manner.
C805P.4	To enhance the skills of self study and lifelong learning.

Department of Computer Science & Engineering

Program Outcomes

PO1 - Engineering knowledge: Apply the knowledge of Applied Mathematics, Discrete Mathematics, Science, Engineering fundamentals, Algorithms, Programming, Data Structures, Databases to the solution of complex engineering problems.

PO2 - Problem analysis: Identify, formulate, review research literature, and analyze complex engineering problems reaching substantiated conclusions using first principles of mathematics, science, and software engineering.

PO3 - Design/development of solutions: Design solutions for complex engineering problems in software engineering for software development and design system components or processes that meet the specified needs with appropriate industry needs.

PO4 - Conduct investigations of complex problems: Use research-based knowledge and research methods including design of experiments, analysis and interpretation of data, and synthesis of the information to provide valid conclusions.

PO5 - Modern tool usage: Create, select, and apply appropriate techniques, resources, and modern engineering and IT tools including prediction and modeling to complex engineering activities with an understanding of the limitations.

PO6 - The engineer and society: Apply reasoning informed by the contextual knowledge to assess societal, health, safety, legal and cultural issues and the consequent responsibilities relevant to the professional engineering practice.

PO7 - Environment and sustainability: Understand the impact of the professional engineering



solutions in societal and environmental contexts, and demonstrate the knowledge of, and need for sustainable development.

PO8 - Ethics: Apply ethical principles and commit to professional ethics and responsibilities and norms of the engineering practice.

PO9 - Individual and team work: Function effectively as an individual, and as a member or leader in diverse teams, and in multidisciplinary settings.

PO10 - Communication: Communicate effectively on complex engineering activities with the engineering community and with society at large, such as, being able to comprehend and write effective reports and design documentation, make effective presentations, and give and receive clear instructions.

PO11 - Project management and finance: Demonstrate knowledge and understanding of the engineering and management principles and apply these to one's own work, as a member and leader in a team, to manage projects and in multidisciplinary environments.

PO12 - Life-long learning: Recognize the need for, and have the preparation and ability to engage in independent and life-long learning in the broadest context of technological change.

Programme Specific Outcomes

On completion of the B.E(Computer Science & Engineering) degree the graduates will be able to

1. Apply standard Software Engineering practices and strategies in real-time software project development using open-source programming environment or commercial environment to deliver quality product for the organization success
2. Design and develop computer programs/computer-based systems in the areas related to algorithms, networking, web design, cloud computing, IoT and data analytics of varying complexity
3. Acquaint with the contemporary trends in industrial/research settings and thereby innovate novel solutions to existing problems

Course Outcomes

THIRD SEMESTER	
BECSE 201T	Applied Mathematics-III
CO201.1	Student can identify Laplace transforms & inverse Laplace transforms of various types of function, its properties and apply it to solve differential equation and are able to use in engineering Problems
CO201.1	Students are competent to work out the <u>Fourier series</u> representation of a periodic function in both exponential and sine-cosine forms and to solve partial differential equation and use <u>Fourier transforms</u> and its inverse in practical applications



CO201.1	Student can find extreme values of functionals using Euler's eq. and also apply knowledge to solve Isoperimetric problems and boundary value problems
CO201.1	Student understand analytic function of a complex variable and are able to apply Cauchy integral theorem and residue theorem to solve contour integrations
CO201.1	Students are able to solve Lagrange's form and linear Homogeneous equation of Higher order with constant coefficient. They can apply method of separation of variable for solving P.D.E. in various engineering problems and also in Laplace transforms
CO201.1	Student can determine eigen values and eigenvectors and the solution of linear differential equation using matrix Method and student apply concept of matrices and its application for solving engineering problems
BECSE 202T Advanced C Programming and Logic Design	
CO202T.1	Understand concept of arrays, string handling concept of handling variable data types using structures building functions.
CO202T.2	Understand concept of file, file handling programs study various file handling functions.
CO202T.3	Able to build programs using pointer. Concept of memory allocation & using various DMA functions
CO202T.4	To build graphic functions & Drawing images on the console by using various graphic functions
CO202T.5	To acquire basic knowledge of mathematical modeling & model of computation
CO202T.6	Design C language program for read and write file operations
BECSE202P: Program Logic Design in 'C' -Lab	
CO202P.1	Get a fundamental understanding of Program Logic design in "C".
CO202P.2	Apply concept of Arrays and Structures.
CO202P.3	Apply the concept of Files and pointers.
CO202P.4	Design using C Graphics.
BECSE203T: Digital Circuits & Fundamentals of Microprocessor	
CO203T.1	To acquire basic knowledge about digital electronics and solving problems related to number systems and Boolean algebra.
CO203T.2	To identify, analyze and design of various combinational circuits.
CO203T.3	To be able to design various synchronous and asynchronous sequential circuits.
CO203T.4	To acquire basic knowledge about Microprocessors and its need.
CO203T.5	To be able to understand the internal structure and interfacing of different peripheral devices with 8085 Microprocessor.
CO203T.6	To be able to understand the various instructions and programming using 8085 microprocessor.
BECSE203P: Digital Circuits & Microprocessor lab	
CO203P.1	Understand the fundamental of basic logic gates and their use in combinational and sequential circuits
CO203P.2	Understand the use of digital components as a switching elements.
CO203P.3	Be able to generate basic arithmetic and logic circuits required in microcomputer system
CO203P.4	Develop assembly language programs.
BECSE204T: Ethics in IT	



CO204.1	Understand the role of ethics within the field of Information Technology and business world
CO204.2	Understand the essential issues related to information security, how to take precautions and use techniques and tools to defend against computer crimes.
CO204.3	Learn many of the key ethical, legal and social issues related to information technology and how to interpret and comply with ethical principles, laws, regulations, and institutional policies.
CO204.4	Apply creative thinking to solve basic technology problems in a business setting and Cultivate the critical and analytical thinking skills necessary to successfully manage ethical decisions and dilemmas in management.
CO204.5	Understand the core IT concepts in arrange of current and emerging technologies and learn to apply appropriate technologies to a range of tasks
CO204.6	Understand the ability to communicate, create, and collaborate effectively using state-of-the-art information technologies in multiple modalities.
BECSE205T: Computer Architecture & Organization	
CO205T.1	To Describe the Basic Structure of Computer Hardware and Software, Bus Structures, Memory Locations and Addresses and Machine Programming Addressing.
CO205T.2	To study Instruction Sets High Level Language consideration, IBM-370 and execution of Instructions.
CO205T.3	It aims to study Microinstructions, micro program sequencing, perfecting microinstruction and Emulation.
CO205T.4	How to represent number system, and to perform addition, subtraction, multiplication and division on signed and unsigned number.
CO205T.5	To study Memories like Semiconductor RAM Memories, Semiconductor ROM Memories, Multiple Module Memories, Cache Memories, virtual Memories and Memory Management.
CO205T.6	Identify the different architectural and organizational design issues that can affect the performance of a computer such as instruction set design, pipelining, RISC architecture and superscalar architecture.
BECSE206P: COMPUTER WORKSHOP LAB	
CO206P.1	Get a fundamental understanding of Hyper Text Markup Language and apply the concepts of basic H.T.M.L code structure.
CO206P.2	Designing the concepts for creation of H.T.M.L page using various tags.
CO206P.3	Validating the data using Java script.
CO206P.4	Implementation of list tag, marquee tag, href tag, frame tag, form tag, and also designing of small website.
CO206P.5	Student should come to know some VBScript Concept that will be useful for development of website .
CO206P.6	Able to know about Linux Operating System.
BECSE207T BECSE207T: Environmental Engineering	
CO207T.1	Students will understand the importance and become aware of the upcoming environmental issues
CO207T.2	Students will understand the importance of natural resources and can work for their conservation
CO207T.3	Students will gain knowledge about the various ecosystems existing in nature and their importance for conservation of nature
CO207T.4	Student will learn about the biodiversity at local, national and global levels and



	the importance of wild life conservation
CO207T.5	Students will gain knowledge about different types of environmental pollution, their effects and control of pollution for the benefit of mankind
CO207T.6	Students will learn the social issues through various Acts under the constitutional provisions
FOURTH SEMESTER	
BECSE208T Discrete Mathematics and Graph Theory	
CO208.1	Students will be able to describe several areas of mathematics beyond calculus , express their interest in mathematics , understand why mathematical thinking is valuable in daily life and solve equations and inequalities both algebraically and graphically
CO208.2	Students will be able to compute the Cartesian product of sets , find the domain , co-domain and range of a relation. Draw the graphs of various types of relations and perform the algebraic operations on real functions
CO208.3	The study of group theory aims to introduce students to some more sophisticated concepts , results as an essential part of general mathematical culture and as a basis for further study of more advanced mathematics
CO208.4	To know concepts from the theory of rings such as zero divisor, division rings and fields which form the essentials of the mathematics. Lattice is an introduction to partially ordered sets. A knowledge of Boolean algebra serves two main purposes: firstly, to describe and define the function of a logic circuit; and secondly by simplifying the Boolean expression defining a particular circuit, one can simplify or reduce the associated hardware
CO208.5	Students will be able to model and solve real-world problems using graphs and trees, both quantitatively and qualitatively
CO208.6	Students will be able to apply diverse counting strategies to solve varied problems involving strings, combinations, distributions, partitions and analyze combinatorial, algebraic, inductive, formal proofs of combinatoric identities
BECSE 209T: Data Structures & Program Design	
CO209T.1	Apply algorithm analysis techniques to evaluate the performance of an algorithm and to compare data structures. Also Implement and know when to apply standard algorithms for the creation, insertion, deletion, searching, and sorting of each data structure
CO209T.2	Implement the basic and advance concepts of stacks and queues through programming. Describe the concept of recursion, and its implementation using a stack.
CO209T.3	.Apply the concepts of Linked list on various problems and implement it.
CO209T.4	Understand and apply fundamental algorithmic problems including Tree traversals, height balanced, weight balanced and AVL trees.
CO209T.5	Implement various searching techniques on graphs and shortest paths algorithms.
CO209T.6	Design and implement concepts of files including hash tables and collision handling techniques.
BECSE209P: Data Structures & Program Design Lab:	
CO209P.1	Student will be able to handle operations like searching, insertion, deletion, traversing mechanism etc. on various data structures.
CO209P.2	Students will be able to use linear and non-linear data structures like stacks, queues, linked list etc.
CO209P.3	Student will be able to choose appropriate data structure as applied to specified problem definition.
CO209P.4	Students will be able to use algorithmic foundations for solving problems and programming.



BECSE210T Operating System	
CO210T.1	Understand the Functions of Operating System, Types of Operating System, Process concept, Process State. Work on WINDOWS Server & LINUX.
CO210T.2	Practically implementation of scheduling algorithm.
CO210T.3	Understand the concept of Deadlock Prevention, Avoidance, Detection and Recovery. Context switch, Threads Overview, Multithreading Models, Threading issues.
CO210T.4	Analyze how to manage the memory by using Paging and Segmentation and analysis of virtual memory management.
CO210T.5	Practical implantation of file system I/O system, Disk Space management, Kernel on LINUX based System.
CO210T.6	Understand the concept of Disk Management, RAID Structure, and Swap-Space Management.
BECSE210P Operating system-Lab	
CO210P.1	Practically implementation of Process concept, Scheduling algorithm.
CO210P.2	Program to implement demand paging using FIFO method, string using LRU method.
CO210P.3	Implementation virtual memory management, producer and consumer processes using semaphore.
CO210P.4	MVT Multiprogramming with a Variable number of Tasks memory management techniques. MFT (Multiprogramming with a Fixed number of Tasks) memory management techniques.
BECSE211T: Theoretical Foundations of Computer Sciences	
CO211.1	Apply principles of fundamental and computational mathematics to the field of computer engineering.
CO211.2	Design finite automata to recognize a given regular language.
CO211.3	Transform a language into regular expression or finite automata or Transition graph.
CO211.4	Define relationship between regular language and context free Grammar. Building a context free grammar for push down automata
CO211.5	Design turing machine and post machine for a given language
CO211.6	Apply the concept of computability. Be familiar with thinking analytically and intuitively for problem solving situation in related area of theory in computer science
BECSE212T SYSTEM PROGRAMMING	
CO212.1	Understand themajorconcept areasoflanguagetranslation, System programs and Operating system overview.
CO212.2	Acquired the knowledgeof working of assembler and itsuse with various searchingAnd sorting techniques.
CO212.3	Enriched with the knowledge of macros, its facilities and its use.
CO212.4	Enriched with the knowledge of loader and its use.
CO212.5	Understands the various phases of compiler and its use,code optimization techniques, machine code generation,and use of symbol table.
CO212.6	Enriched with the knowledge of databases used by translators like assembler,compiler and other system programs.
BECSE213P COMPUTER WORKSHOP – 2 LAB	
CO213P.1	Should be able to understand concept linuxOS.
CO213P.2	Should be able to execute linux command.



CO213P.3	Should be able to design shell script program.
CO213P.4	Design shell script program using loop control and decision control statement
FIFTH SEMESTER	
BECSE301T: Data Communication	
CO301T.1	Recall fundamental concepts of Data Communication.
CO301T.2	Analyze the signal conversion methodologies.
CO301T.3	Illustrate communication media, frequency allocation & propagation of radio waves.
CO301T.4	Elaborate spread spectrum alongwith its services and various multiplexing schemes.
CO301T.5	Compare and contrast various Digitizing & Compression of multimedia
CO301T.6	Analyze various encoding & compression schemes.
BECSE302T: Object Oriented Programming	
CO302T.1	To understand how C++ improves C with object-oriented features.
CO302T.2	To understand features/properties/basic concept of object oriented programming C++.
CO302T.3	To enhance problem solving and programming skills in C++ with extensive programming projects
CO302T.4	To learn advanced features of the C++ programming language like STL, file handling, exception handling
CO302T.5	To provide sufficient knowledge to develop the real world project with object oriented concepts.
BECT302P Object Oriented Programming-Lab	
CO302P.1	Students able to understand the basic concept/properties /features of object oriented programming language & implement the programs using classes & objects.
CO302P.2	Understand, design & implement the concept of operator overloading & polymorphism using C++
CO302P.3	Understand, design & implement the concept of inheritance & its type using C++
CO302P.4	Able to understand, design & implement the advance concept like virtual function, abstract class using C++.
CO302P.5	Able to understand, design & implement the advance concept of file handling using C++.
CO302P.6	Able to understand, design & implement the advance concept of STL, container & exception handling using C++
BECSE303T: Database Management System	
CO303T.1	Explore the various models of DBMS and levels in the architecture of DBMS.
CO303T.2	Relate the problems in day to day life by implementing the Entity relationship model and understanding queries in terms of relational algebra.
CO303T.3	Understand complex queries using PL/SQL also techniques to improve performance of database.
CO303T.4	Understand the various database optimization techniques to serve the industry in more efficient way.
CO303T.5	Face and resolve the crash in database system.
CO303T.6	Apply various database recovery techniques also understands various databases.
BECSE303P Database Management System-Lab	



CO303P.1	Learning a systematic way of describing and defining a business process of Entity relationship model and understands various components of it.
CO303P.2	Implementation of various queries in sql.
CO303P.3	Understand and execute complex queries using PL/SQL.
BECSE304T Computer Graphics	
CO304.1	Understand the basic concepts and terminology used in computer Graphics.
CO304.2	Understand the different transformations like Scaling, rotation, translation, rotation about arbitrary point, reflections, shearing.
CO304.3	To learn about polygon filling techniques. Discuss various algorithms for scan conversion and filling of basic objects and their comparative analysis.
CO304.4	Use of geometric transformations on graphics objects and their application in composite form and concept of viewport.
CO304.5	Understand about the concept segmentation and windowing and clipping techniques, and the different methods used for Curves and surfaces.
CO304.6	Understand and use the different color models , color applications and Animation techniques
BECSE305T: Design & Analysis of Algorithm	
CO305T.1	Define the basic concept of algorithm and Analyze the asymptotic performance of algorithms.
CO305T.2	Derive and solve recurrences describing the performance of divide and Conquer algorithms.
CO305T.3	Find optimal solution by applying greedy approach
CO305T.4	Find optimal solution by applying dynamic approach, backtracking.
CO305T.5	Explain the major graph algorithms and their analyses and Differentiate polynomial and non-polynomial problems
CO305T.6	Can define the classes P and NP and explain the significance of NP-completeness
BECSE305P: Design & Analysis of Algorithm-Lab	
CO305P.1	Ability to design the algorithm using divide and conquer method
CO305P.2	Ability to Apply the concept of Greedy Approach
CO305P.3	Ability to Apply the concept of Dynamic programming
CO305P.4	Ability to apply the concept of backtracking
SIXTH SEMESTER	
BECSE306T: Artificial Intelligence	
CO306T.1	Understand the problem spaces, problem solving and learning methods in artificial intelligence. Apply basic artificial intelligence algorithms to solve problems.
CO306T.2	Understand the fundamentals of knowledge representation (logic-based, frame-based, semantic nets), inference and theorem proving .Develop skill to create small to medium sized programs Prolog, Python, Matlab etc. .
CO306T.3	Analyze how uncertainty is being tackled in the knowledge representation and reasoning process, in particular, techniques based on probability theory and possibility theory (fuzzy logic).
CO306T.4	The outcomes of this course affect the ability of the students to design, build and implement expert system and to explain most of the knowledge-based systems used in AI to provide solutions to real-world problems.
CO306T.5	Ability to apply knowledge representation, reasoning, and machine learning techniques to real-world problems Master the skills and techniques in Natural



	Language Processing.
CO306T.6	Able to explain the function of artificial neural networks, neural learning, Knowledge representation in ANN. To understand the fundamental theory and concepts of neural networks, neuro-modeling, several neural network paradigms and its applications and Genetic Algorithm.
BECSE307T: Design Pattern	
CO307T.1	To learn the concept of Object Oriented Software Development Process.
CO307T.2	TO understand the basic Structural modeling and create the class and object diagram, Collaboration diagram.
CO307T.3	To Understand the basic Behavioral Modeling by using Use case diagram, Activity Diagram, State diagram, Time diagram , Dataflow diagram, Sequence diagram, ER Diagram
CO307T.4	To learn the concept of Architectural Modeling which include deployment diagram, Component diagram.
CO307T.5	To learn about Unified Process with use case driven, capturing use case, iterative and incremental, learn about implementation to realize the use cases, testing use cases.
CO307T.6	To understand the Architecture-Centric Process, steps of architecture and an architecture description.
BECSE307P: Design Pattern Lab	
CO307P.1	Be able to understand the difference between object oriented programming and procedural oriented language and data types in C++.
CO307P.2	To prepare object-oriented design for small/medium scale problems.
CO307P.3	To understand the role of inheritance, polymorphism, dynamic binding and generic structures in building reusable code.
BECSE308T: Functional English	
CO308T.1	Students have better reading comprehension, pronunciation,
CO308T.2	functional English grammar.
CO308T.3	Students are able to write letters and resumes
CO308T.4	Students are able to organize their thoughts for Effective presentation and writing.
CO308T.5	Students are able to learn skills to present themselves well in aninterview, and handle a Group Discussion.
BECSE309T: Software Engg. & Project Management	
CO309T.1	Knowledge of software engineering methods, practices, process models and application.
CO309T.2	Knowledge of software engineering Practices and Principles for various stages.
CO309T.3	To learn various Modeling Approaches and Design Goals. Further to understand how to map information into various models.
CO309T.4	To learn software testing methods and types, And to understand debugging concept with various testing methods.
CO309T.5	To understand software quality metrics, Source code metrics, Testing and Maintenance Project metric and fundamentals.
CO309T.6	To understand project management, and to know software risks and principles of quality management, further the concept of reengineering and reverse engineering



BECSE310T: Computer Networks	
CO310T.1	Develop a fundamental understanding of network design principles and performance metrics.
CO310T.2	Understand the data link-layer concepts, protocols, and services and basic concepts of wired and wireless networks.
CO310T.3	Distinguish packet switching and circuit switching techniques.
CO310T.4	Understand different network interfaces and routing techniques for IP based networking infrastructure.
CO310T.5	Develop mechanisms for effective network management, congestion control and congestion avoidance in the internetwork.
CO310T.6	Apply the knowledge earned into various application level services like email, www etc.
BECSE310P: Computer Networks-Lab	
CO310P.1	1. Simulate and then configure different types of networks.
CO310P.2	2. Implement error correction algorithm & framing.
CO310P.3	3. Implement error detection algorithm & sliding window protocols.
CO310P.4	4. Implement networking concepts like server, client & addressing mechanism with the help of language like java & routing algorithms & application layer protocols
BECSE311P: MINI Project	
CO311P.1	Acquire practical knowledge within the chosen area of technology for project development
CO311P.2	Identify, analyze, formulate and handle programming projects with a comprehensive and systematic approach
CO311P.3	Contribute as an individual or in a team in development of technical projects
CO311P.4	Develop effective communication skills for presentation of project related activities
CO311P.5	Prepare a documentation on developed project
CO311P.6	Understand the IEEE paper Format.
SEVENTH SEMESTER	
BECSE401T: Data Warehousing & Mining	
CO401T.1	Explore architecture of Data warehouse and different OLAP operations.
CO401T.2	Understand data mining functionalities and major issues and challenges in data mining.
CO401T.3	Recognize various classification methods and clustering techniques to implement the same in real world in efficient way.
CO401T.4	Understand the various frequent patterns and association rules with the help of Apriori and FP growth algorithms.
CO401T.5	Realize importance of web data mining, temporal and spatial data mining.
CO401T.6	Understand Big data analytics, different technologies and tools. And significance of Hadoop from industry point of view.
BECSE401P: Data Warehousing & Mining-Lab	
CO401P.1	Get a knowledge of different data mining tools.
CO401P.2	Demonstrate WEKA Explorer, Mining techniques and Attribute Relation File
CO401P.3	Implement clustering, classification, association finding, feature selection and visualisation techniques on real world data
CO401P.4	Determine whether a real world problem has a data mining solution
BECSE402T: Language Processor	



CO402T.1	Find out the basic concepts and application of Compiler Design, Students will get the concepts of the actual roles of the lexical analyzer
CO402T.2	Students will get the concepts of different Parsing techniques and Construction of syntax trees
CO402T.3	Students will get the concepts of Intermediate code generation, Code optimization and Code generations
CO402T.4	Apply their basic knowledge of Data Structure to design Symbol Table
CO402T.5	Recognize various Code optimization Techniques and Error Recovery
CO402T.6	Students will get the concepts of Run time Environments and Type checking
BECSE402P: Language Processor-Lab	
CO402P.1	Should be able to understand Flex lexical analyzer.
CO402P.2	Design flex program for recognize token.
CO402P.3	Implement flex program for infix and postfix using Yacc
CO402P.4	Design flex program for check syntax "for" and "switch" statement.
BECSE403T: TCP and IP (Elec III)	
CO402T.1	To understand the various standards on data communication
CO402T.2	To understand the functionality of reference model for data communication
CO402T.3	To understand the various layers of different protocols
CO402T.4	To understand the basic concept of socket programming and client server model
BECSE403T: Big Data Analysis & Business Intelligence (Elec III)	
CO403T.1	understand the concept and challenge of big data and why existing technology is inadequate to analyze the big data
CO403T.2	collect, manage, store, query, and analyze various form of big data.
CO403T.3	gain hands-on experience on large-scale analytics tools to solve some open big data problems
CO403T.4	understand the impact of big data for business decisions and strategy.
BECSE404T: Mobile Computing (Elec IV)	
CO404T.1	To provide the student with an understanding of the Cellular concept, Frequency reuse, Hand-off strategies.
CO404T.2	To provide the student with an understanding of Equalization and diversity reception techniques
CO404T.3	To give the student an understanding of digital cellular systems (GSM, GPRS, WAP, cdma2000, and W-CDMA)
CO404T.4	To illustrate architecture and protocols in pervasive computing and
CO404T.5	To design successful mobile and pervasive computing applications and services
CO404T.6	To give practical experience in the area through the design and execution of a modest research project
BECSE405 P Project & Seminar	
CO405P.1	Deliver effective presentations in contexts that may require power point, extemporaneous or impromptu oral presentations.
CO405P.2	Demonstrate both oral and written work in a grammatically accurate and Theoretically engaging style.
CO405P.3	Conceive, arrange, and articulate ideas logically and clearly.
CO405P.4	Design and develop Technical reports.
EIGHTH SEMESTER	
BECSE406T: Distributed Operating system	



CO406T.1	To learn the principles, architectures, algorithms and programming models used in distributed systems.
CO406T.2	Understand the implications of Distributed System on society, primarily in the aspects of communication, commerce, crime, ethics, and privacy;
CO406T.3	To learn the requirement and importance of algorithmic functions and computer programming in distributed systems.
CO406T.4	Introduction to the fundamentals of distributed computer systems, assuming the availability of facilities for data transmission.
CO406T.5	The structure of distributed systems using multiple levels of software is emphasized.
CO406T.6	Provide knowledge of and proficiency in basic techniques for the develop, design and implement sample distributed systems.
BECSE406P: Distributed Operating system Lab	
CO406P.1	Understand , fundamental principles of Distributed Systems
CO406P.2	Understands the message communication, remote procedure call and Remote method invocation (RPC and RMI) along with group communication.
CO406P.3	Apply the concepts of process for real time applications
CO406P.4	Implement and analyze deadlock conditions for various applications.
CO406P.5	Design a distributed shared memory system.
CO406P.6	To understand file system along with concepts of CORBA RMI
BECSE407T: Information & Cyber Security	
CO407T.1	To understand design issues in Information Security and security threats, services and mechanisms to counter them.
CO407T.2	Classify computer and security threats and develop a security model, to prevent, detect and recover from attacks.
CO407T.3	Design and analyze authentication protocols for two party communications and analyze various key agreement algorithms to identify their weaknesses.
CO407T.4	Analysis of ethical issues related to the misuse of computer security, Message Authentication and key management
CO407T.5	To be familiar with advanced security issues and technologies (such as DDoS attack detection and containment, and anonymous communications)
CO407T.6	Analyze various Software Vulnerability and various security issues related to the Electronic transaction.
BECSE407P: Information & Cyber Security-Lab	
CO407P.1	Get a fundamental understanding of Cyber and Information Security and applying the concept of Information Security.
CO407P.2	Designing the concepts of conventional Encryption.
CO407P.3	Analysis of various Algorithms and ethical and professional issues.
CO407P.4	.Implementation of protection and security mechanisms.
BECSE408P: Soft Computing Techniques (Elec III)	
CO408T.1	Comprehend the fuzzy logic and the concept of fuzziness involved in various systems and fuzzy set theory.
CO408T.2	Understand the concepts of fuzzy sets, knowledge representation using fuzzy rules, approximate reasoning, fuzzy inference systems, and fuzzy logic
CO408T.3	To understand the fundamental theory and concepts of neural networks, Identify different neural network architectures, algorithms, applications and their limitations



CO408T.4	Understand appropriate learning rules for each of the architectures and learn several neural network paradigms and its applications
BECSE408P: Clustering & Cloud Computing (Elec III)	
CO408T.1	Understand cloud computing concept and a systematic knowledge of the fundamental technology and characteristics.
CO408T.2	Learn the main concepts of cloud computing services and virtualization technology.
CO408T.3	Explore and understand various cloud platforms and web services provided by Google, Amazon and Microsoft.
CO408T.4	Learn the broad approaches to cloud migration and various applications of Cloud.
CO408T.5	Identify and understand the core issues of cloud computing such as security and storage.
CO408T.6	Learn various cloud computing tools and future cloud.
BECSE409T Elective-IV Digital Forensic	
CO409.1	Assess many of the opportunities and challenges associated with digital information systems that you have not seen before and explain them to those who have less technical background than you
CO409.3	Actively contribute to discussions about design, maintenance and changes to the information systems that
CO409.4	support digital collections for which you are responsible
CO409.5	Read and understand the information technology trade press, recognizing opportunities and strategic implications
CO409.6	for the management of digital collections
CO409.7	Contribute substantive recommendations for policies related to the management of digital collections
BECSE410P: Project & Seminar	
CO410P.1	Deliver effective presentations in contexts that may require power point, extemporaneous or impromptu oral presentations.
CO410P.2	Demonstrate both oral and written work in a grammatically accurate and rhetorically engaging style.
CO410P.3	Conceive, arrange, and articulate ideas logically and clearly.
CO410P.4	Design and develop Technical reports.

First Year Department COURSE OUTCOME

APPLIED MATHEMATICS-I	
CO101.1	Student learned the skill of finding nth derivative of standard functions and product functions. They can find series expansion of functions and apply the knowledge of derivation to find limiting values of indeterminate forms and curvature
CO101.2	Student achieve the skill of several partial differential of first and higher order for functions of several variables and they apply the skill for finding series expansion of



	functions of two variables, maxima and minima of function of two variables
CO101.3	Students can find inverse of matrix by adjoint and partitioning method they can apply this skill to solve system of linear equation. They can find rank of a matrix consistency of system of equations
CO101.4	Student know how to solve first order first degree and higher degree equations, linear reducible to linear and exact differential equations. They can apply this knowledge to solve engineering problems in simple electrical circuit.
CO101.5	Student gain the knowledge to solve higher order differential equations with constant coefficients, simultaneous differential equations, special type of equations and apply their knowledge to differential equations in various engineering problems such as oscillation of a spring, deflection of beam etc
CO101.6	Students learn cartesian and polar forms of complex numbers, geometrical representation of fundamental operations on complex numbers, De Moivre theorem, roots of complex number hyperbolic functions and their inverse. Logarithm of complex numbers separation into real and imaginary parts

APPLIED MATHEMATICS-II	
CO201.1	Students learned to use Gamma and Beta functions for evaluating definite integrals in simplified way. Also they learned the technique of differentiation under integration sign to evaluate difficult definite integrals in engineering problems. They can find mean value, M.S.V. and R.M.S.V. of periodic functions
CO201.2	Students developed the skill to trace Cartesian, polar, parametric curves and can apply this knowledge to find area between two curves, surface area, volume of solid of revolution
CO201.3	Students can evaluate double and triple integrals and can apply this technique for finding area between two curves, volume, mass and C.G
CO201.4	Students can find triple, quadruple product of vectors and can solve vector equations. They can resolve components of vectors in different directions. They understand the concept of irrotational, solenoidal vectors, gradient and directional derivatives
CO201.5	Students developed the skill of evaluating line, surface and volume integrals. They evaluate multiple integrals using relation between single, double and triple integrals
CO201.6	Students can fit straight line, parabola and exponential curves to the given data using least square method. They can find lines of regression and correlation coefficient. Also Students know the techniques to find the missing terms in discrete data for unequal intervals and find analytical solution of difference equations which are very useful for various branches of engineering

Engineering Physics	
CO 102.1	To identify and apply the Quantum Mechanics postulate on the physical Systems which are incompatible with classical physics.
CO 102.2	To acquire working knowledge of the Quantum Mechanics postulate on the measurements of uncertainty in physical quantity and evolution of wave function.
CO 102.3	To apply the knowledge of a crystal structure in terms of atom positions, unit cells, and crystal symmetry using diffraction experiment.
CO 102.4	To understand the characteristics of semiconductor Device and its application in Engineering.



Advance Physics	
CO202.1	Identify and understand the basic concepts and principle of laser & Wave optics and their engineering applications to apply the acquired knowledge to solve engineering problems
CO202.2	Develop ability to demonstrate theoretical knowledge of Electron ballistics and to apply the acquired knowledge to solve engineering problems
CO202.3	Gain knowledge of fundamental concepts and principles of Electron optics and their engineering applications.
CO202.4	Understand and apply the fundamental concepts and principles of Fibre optics & Nanoscience in their engineering applications.

Engineering Chemistry	
CO 103.1	The students will be able to identify and apply the knowledge of water treatment for domestic and industrial purpose.
CO 103.2	Students will understand the concept of corrosion of metals and their practical application to control corrosion in various situations.
CO 103.3	Students will gain basic knowledge about the traditional construction materials and the new trends applied in the engineering field.
CO 103.4	Students will understand the basic principles of Green Chemistry and its applications for protection of the environment and learn the working of batteries and their applications in various fields of Engineering.

Material Chemistry	
CO 203.1	The students will be able to determine calorific value of fuels using various calorimeters & understand the importance of nonconventional energy sources and Bio-fuels over conventional energy sources.
CO 203.2	Students will learn the use of liquid fuels in different types of engines and the basic concepts of combustion process to achieve minimization of environmental pollution
CO 203.3	Select appropriate lubricant for particular use depending on its various properties.
CO 203.4	Properly select and apply the knowledge of advanced material to develop new technology.

Communication Skill	
CO 107.1	Students learn the usage of Grammar in for formal correspondence like letter, Mails, & Resume
CO 107.2	Students learn the correct format for formal correspondence in writing letters, reports and resumes.
CO 107.3	To enhance analitical apprach through vocabulary and word building.
CO 107.4	To develop self confidence in oral communication and reading.
CO 107.5	To overcome the barriers in the GD&PI and develop analytical perspective through mock drills.

ETHICAL SCIENCE	
CO208.1	To understand the civic and law structure of society.
CO208.2	Applying psychology principal on human working conditions and have humanistic approach.
CO208.3	To understand the ethical concept of society in which on lives and be acquainted with



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	the working environment and organization.
CO208.4	To gain knowledge of the Country's Constitution and political structure of society
CO208.5	To understand the ethical concept of society in which on lives and be acquainted with the working environment and organization.