

Madhukarrao Pandav College Of Engineering Bhilewada, Bhandara

Course Outcome

Department of Civil Engineering

3rd Semester

Course Outcome

Subject:	APPLIED MATHEMATICS-III
Code:	BTCVE301T
Sr.No.	Course Outcome
1	Apply Fourier series in the analysis of periodic functions not in terms sine and cosine encountered in engineering problems
2	Solve Partial differential equations of first, higher and second order using elementary techniques; formulate mathematical models to simple problems of vibration of strings and beams in terms of Partial differential equations and solving with elementary solution techniques.
3	Learn the concept of finding maxima and minima of definite integral involving unknown function and its derivatives.
4	Learn Eigen value problem and its applications.
5	Learn to find an approximate solution of algebraic and transcendental equations, system of linear equations and first order ordinary differential equations by various Numerical

	Methods
6	Formulate simple optimization problem and learn to solve it by Graphical method and Simplex method.

Subject:	FLUID MECHANICS
Code:	BTCVE302T
Sr.No.	Course Outcome
1	Understand the importance and practical significance of various fluid properties.
2	Comprehend and estimate various forces acting on partially and fully submerged bodies
3	Evaluate the importance of various parameters on the fluid motion.
4	Know various flow measuring devices with their practical applications

5	Illustrate the concept of impulse momentum principle, dimensional analysis and model analysis of a fluid phenomenon
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Subject:	SOLID MECHANICS
Code:	BTCVE303T
Sr.No.	Course Outcome
1	Understand the behaviour of materials under different stress and strain conditions
2	Evaluate and draw shear force diagram and bending moment diagram and their relation
3	Formulate the bending and shear stresses equations and able to draw bending and shear stress diagrams.
4	Formulate slope and Deflection equations for beams subjected to various loads by Macauleys method
5	Analyze and Evaluate the torsion in circular section, Direct and Bending Stresses

Subject:	GEOTECHNICAL ENGINEERING
Code:	BTCVE304T
Sr.No.	Course Outcome
1	Find the index and engineering properties of the soil.
2	Determine properties & demonstrate interaction between water and soil.
3	Analyze and compute principles of compaction and consolidation settlements of soil.
4	Ability to analyze to calculate bearing capacity, earth pressure and foundation settlement.
5	Study and identify different type's natural materials like rocks & minerals and soil.

Subject:	BUILDING CONSTRUCTION & ELEMENTARY BUILDING DRAWING
Code:	BTCVE305T
Sr.No.	Course Outcome
1	Identify components of a building.
2	Differentiate and identify types of building materials
3	Select appropriate material for building construction.
4	Plan various construction related activities and their quality control
5	Know & identify the latest techniques and materials used.

Subject:	EFFECTIVE TECHNICAL COMMUNICATION
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Code:	BTCVE306T
Sr.No.	Course Outcome
1	Participate effectively in groups with emphasis on listening and meta cognitive thinking.
2	Prepare memorandum and report
3	Deliver an effective oral presentation
4	Acquire public speaking skills handling the audience professionally.
5	Analyze causes of deterioration of concrete components

Madhukarrao Pandav College Of Engineering Bhilewada, Bhandara

Course Outcome

Department of civil Engineering

4th Semester

Course Outcome

Subject:	CONCRETE TECHNOLOGY
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Code:	BTCVE401T
Sr.No.	Course Outcomes
1	Think logically for development Concrete technology application in field of Civil Engineering
2	Gain an experience in the implementation of Concrete Materials on Engineering concepts which are applied on Construction Fields
3	Understand the process of mix design of concrete.
4	Differentiate special concrete from conventional concrete.
5	Analyze causes of deterioration of concrete components

Subject:	STRUCTURAL ANALYSIS
Code:	BTCVE402T

Sr.No.	Course Outcomes
1	Apply knowledge to analyse determinate and indeterminate structures.
2	Apply knowledge to perform analysis of beams and frames using Slope Deflection Method and Moment Distribution Method.
3	Apply knowledge of Influence Line Diagram to analyse structural members for rolling loads.
4	Apply knowledge of Direct Stiffness Method to analyse Beams and Plane Frames.
5	Apply knowledge of Direct Stiffness Method to formulate Stiffness Matrix, Transformation Matrix, Load Matrix to analyse Plane Truss.

Subject:	ENVIRONMENTAL ENGINEERING
Code:	BTCVE403T
Sr.No.	Course Outcomes

1	Have knowledge of characteristics of water,drinking water standards and necessity of treatment
2	Design various units of conventional water treatment plant.
3	Understand the characteristics of waste water, necessity of treatment, types of treatment processes
4	Equip with the basic knowledge related to design of waste water treatment
5	Understand of significance of air pollution, solid waste , climate change, geo environment etc

Subject:	TRANSPORTATION ENGINEERING
Code:	BTCVE404T
Sr.No.	Course Outcomes
1	Define and describe different objectives and requirements of Highway Development and Planning, Alignments.

2	Explain, Discriminate and Design various Geometric Features of Highways & Pavement Design
3	Understand, analyze, apply and evaluate the parameters of Traffic Engineering.
4	Explain and describe various terms in railway engineering and should be able to explain, discriminate and design various geometric features of railway track.
5	Understand the aircraft characteristics and terminal area functions, analyze, and evaluate the basic runway length, orientation of runway.

Subject:	SURVEYING AND GEOMATICS
Code:	BTCVE405T
Sr.No.	Course Outcomes
1	Measure length and bearing of lines using various instruments and calculate area of given field.
2	Use the theodolite to measure angle and distances for traversing also identify and correct the errors in traverse. Design and lay-out the various types of curves.

3	To carry out levelling and contouring also able to determine volume of earthwork.
4	Use modern instrument like Total work station , GPS, DGPS for surveying and able to prepare maps in CAD
5	Use Remote Sensing and Geographical Information System(GIS), UAV Drone and LiDAR Survey.

Subject:	MINI PROJECT
Code:	BTCVE406P
Sr.No.	Course Outcomes
1	After completion of syllabus student able to propse research/basic concept question and prsented them in a clear and distinct manner through different oral, written, analysis and design techniques.

Madhukarrao Pandav College Of Engineering Bhilewada, Bhandara

Course Outcome

Department of Civil Engineering

5th semester

Course Outcome

Subject	Hydraulics Engineering
code	BTCVE501T
Sr No.	Course Outcome
1	Understand the concepts related to boundary layer theory and determination of drag and lift forces
2	Apply the knowledge of theories and equations of pipe flow in analyzing and designing the pipe network systems and to discuss effects of water hammer pressures
3	Use the concepts of uniform and critical flow through open channels, design of efficient channel sections and application of specific energy concept.
4	Understand gradually varied flow analysis and its computation, and its application in open channel flow.
5	Understand and apply basics principles related to turbines & Pumps in water Resources planning

Subject	Hydraulics Engineering (P)
code	BTCVE501(P)
Sr No.	Course Outcome
1	Apply the knowledge of fluid mechanics to address the uniform flow problems in open channels
2	Perform dimensional and model analysis for different fluid flow problems
3	Understand the functions and working principles of hydraulic machineries

Subject	Reinforced Cement Concrete Designs
code	BTCVE502T

Sr No.	Course Outcome
1	Understand the fundamental concepts of working stress method as per IS 456- 2000 and Pre-stressed concrete method
2	Apply the fundamental concepts of limit state method on limit state of serviceability
3	Analyze the fundamental concepts of limit state of collapse in flexure, Shear & Bond as per IS 456-2000
4	Evaluate the fundamental concepts of limit state of collapse in compression and design of footing as per IS 456-2000
5	Design of Simply supported Two-way slab

Subject	Civil Engineering Materials, Testing and Evaluation
Code	BTCVE 503T
Sr No.	Course Outcome

1	Evaluate the role of materials in Civil Engineering
2	Know the mechanical behaviour and properties of steel and concrete by standard testing procedures for identifying their performance
3	Explain special materials, composite materials and use of new techniques in constructions for satisfying the future needs of industry
4	Exposure to a variety of established material testing procedures/techniques and the relevant codes of practice
5	Evaluate and write a technical laboratory report

Subject	Civil Engineering Materials, Testing and Evaluation(Practical)
code	BTCVE 503P
Sr No.	Course Outcome
1	Evaluate the role of materials in Civil Engineering

2	Know the mechanical behaviour and properties of steel and concrete by standard testing procedures for identifying their performance
3	Explain special materials, composite materials and use of new techniques in constructions for satisfying the future needs of industry
4	Exposure to a variety of established material testing procedures/techniques and the relevant codes of practice
5	Evaluate and write a technical laboratory report.

Subject	Professional Practice, Law & Ethics
code	BTCVE504T
Sr No.	Course Outcome
1	Understand basic purpose of profession, professional ethics and various moral and social issues.
2	Analyse various moral issues and theories of moral development

3	Realize their roles of applying ethical principles at various professional levels
4	Identify their responsibilities for safety and risk benefit analysis
5	Understand their constructive roles in dealing various global issues

Subject	Elective I: Advanced Building Materials
code	
Sr No.	Course Outcome
1	Understand the structural, physical and long term performance of building materials used in construction
2	Understand special mortars and admixtures used in Civil engineering applications
3	Understand the properties of Ceramic materials in construction projects

4	Understand the uses of polymeric materials in construction
5	Understand green building concept and materials

Subject	Elective-II: Advanced Concrete Structure
code	BTCVE506T
Sr No.	Course Outcome
1	Understand the behaviour and failure modes of different RC structural members
2	Analyze and apply the results in designing various RC structural members
3	Apply the knowledge and skills in practical problems
4	Understand the relevant software and use the same in the analysis and design of RC members

Subject	Elective-II: Advanced Concrete Technology
code	BTCVE506T
Sr No.	Course Outcome
1	Think logically for development Concrete technology application in field of Civil Engineering
2	Differentiate special concrete from conventional concrete Gain an experience in the implementation of Concrete Materials on Engineering concepts which are applied on Construction Fields
3	Understand the process of mix design of concrete
4	Gain an experience in the implementation of Concrete Materials on Engineering concepts which are applied on Construction Fields
5	To understand the various factors affecting the concrete and Advanced Non Destructive Testing Methods

Subject	Elective II: Railway Engineering
code	BTCVE506T
Sr No.	Course Outcome
1	Explain Components of Railway Track, different Railway Gauges
2	Design track Gradients as per given requirements
3	Discuss various Types of Track Turnouts
4	Explain Interlocking and modern signal system
5	Describe Surface Defects on Railway Track and Their Remedial Measures

Subject	Industrial Training & Professional Skill Training
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code	BTCVE507P
Sr No.	Course Outcome
1	Understand organizational skills & professional practices
2	Interpret the communication skills of organizational members with each other
3	Analyze the structural problems by using STADD.PRO
4	Design the structural members by using STADD.PRO

Subject	Organizational Behaviour
code	BTCVE508AU
Sr No.	Course Outcome

1	Understand the concept and importance of organizational behaviour
2	Acquire the knowledge of interpersonal behaviour and transaction analysis
3	Know different traits and theories of personality
4	Analyze the importance of motivation in organization and types of leadership

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Course Outcome
Department of Civil Engineering
6th semester
Course Outcome

Subject	Estimating and Costing
code	BTCVE601T

Sr No.	Course Outcome
1	Prepare the preliminary estimate for administrative approval & technical sanction for a civil engineering project.
2	Write the specification of the works to be undertaken, prepare the tender documents, fill the contracts and make use of knowledge of different contract submission & opening in awarding the work to the contractor.
3	Use the concept of SD, EMD, MAS, Running Bill, Final Bill during the entire project
4	Use the technique of Rate analysis in estimating the exact cost of material & manpower and hence the entire project.
5	Estimate the bill of quantities using different techniques of preliminary & detailed estimation of buildings & roads & Arrive the exact value of the asset (movable & immovable) using different Valuation techniques

Subject	Construction Engineering and Management
code	BTCVE602T
Sr No.	Course Outcome

1	Get themselves acquainted with various economic and managerial aspects of construction industry
2	Understand the tools and techniques of economic analysis for improving their decisionmaking skills
3	Analyze the structure of market and effects of inflation with special reference to construction industry.
4	Understand the importance of marketing management and its effect on construction industry.
5	Acquire financial acumen for construction business.

Subject	Water Resource Engineering
code	BTCVE603T
Sr No.	Course Outcome
1	Understand occurrence, movement and distribution of water and estimate water abstractions, runoff and hydrographs

2	Illustrate different systems and methods of irrigation and estimate the quantity of water required by crops and estimate the quantity of water required by crops.
3	Estimate reservoir capacity and analyse and design earth dams
4	Design and analyse gravity dams and illustrate types of Spillways and energy dissipators
5	Design unlined and lined channels and illustrate concepts of other irrigation structures

Subject	Computer Aided Civil Engineering Drawing
code	BTCVE606P
Sr No.	Course Outcome
1	Understand the basics of AutoCAD software & it's important commands
2	Apply the knowledge of symbols & sign conventions to edit & modify AutoCAD Drawings and prepare consisting masonry bonds

3	Implement line drawings & detailed floor plan drawings plot Isometric & Perspective view of building
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Subject	Environment Management
code	BTCVE604T
Sr No.	Course Outcome
1	Identify the scientific and social aspects of environmental issues.
2	Understand the procedure of environmental impact assessment.
3	Identify and evaluate and the environmental risk assessment involved in the EMP.
4	Understand the importance of the process of Environmental Audit and vital parameters associated with it.
5	Understand the role of environmental management system in protecting the resources using environmental legislations.

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Subject	Repairs & Rehabilitation of Civil Engineering Structures
code	BTCVE604T
Sr No.	Course Outcome
1	Explain deterioration of concrete in structures
2	Carryout analysis using NDT and evaluate structures
3	Assess failures and causes of failures in structures
4	Carryout Physical evaluation and submit report on condition of the structure
5	Carryout analysis of structures and take preventive action as per conditions & Requirement

Madhukarrao Pandav College Of Engineering Bhilewada, Bhandara

Course Outcome

Department of Civil Engineering

7th semester

Course Outcome

Subject	Design of Steel Structure
code	BTCVE701T
Sr No.	Course Outcome
1	Use the knowledge of structural properties in assessing its strength and understand design philosophy.
2	Apply the knowledge of various techniques in analysing and design the members subjected to axial loading
3	Make use of knowledge of analysis in structural planning and design of various components of building subjected to bending.
4	Apply engineering concept to design members subjected to complex nature of loading.

5	Make use of knowledge to design footings.
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Subject	Project Work Phase-I
code	BTCVE706P
Sr No.	Course Outcome
1	Understand organizational skills & professional practices
2	Interpret the communication skills of organizational members with each other
3	Collection of data for analyze/design the Civil Engineering problem by using appreciate methodology in a team work

Subject	Advanced RCC Design (Elective-IV)
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code	BTCVE702T
Sr No.	Course Outcome
1	Understand the conceptual design of overhead circular service reservoirs.
2	Analysis and design of Highway Bridge: Slab type and Girder type
3	Analyze and Design building frames using Limit state Method
4	Select the parameters in beam theory for design cylindrical shells
5	Design Silos using Limit state Method

Subject	Advance Soil Engineering (Elective-IV)
Code	BTCVE702T

Sr No.	Course Outcome
1	Estimate the amount of consolidation and settlement and time required for settlement under a given load.
2	Understand the effects of seepage on the stability of structures and calculate stresses that influence soil behavior
3	Ability to analyze the stability of natural slopes safety and sustainability of the slopes, design of retaining structures, reinforced earth wall, etc
4	Understand basics principles of flow and soil permeability through porous media, Construct flow nets for water flow calculations.
5	Design deep foundation systems under different loading and soil conditions

Subject	Sustainable Resource Management (Elective IV)
code	BTCVE702T
Sr No.	Course Outcome

1	To be able to understand the various available natural resources with their objectives, demand and Social dimensions related to the sustainability.
2	To be able to understand the various available land, soil and water resources with their objectives, impacts, renewal and management
3	To be in a position to understand various Conventional and Non-renewable Energy Resources
4	To be in a position to understand the forest and mineral resources
5	To be in a position to understand the Natural Resource Conservation system

Subject	Building Construction Practices (Elective – IV)
code	BTCVE702T
Sr No.	Course Outcome
1	Explain classification of Building as per NBC and building component & its function

2	Explain different types of foundations & related activities as per requirement
3	Carryout construction of sub structure as per conditions & requirement
4	Carryout construction of super structure as per conditions & requirement
5	Carryout building maintenance work as per conditions & requirement

Subject	Design of Hydraulic Structures (Elective-IV)
code	BTCVE702T
Sr No.	Course Outcome
1	Understanding the design of dam section and its usefulness.
2	To know the types of canal, canal headwork's, cross-drainage and canal regulator works

3	Application of the canal, dam and spillway in civil engineering structures
4	Be able to select the type of storage works, analysis, design of various components part of diversion head works.
5	To know the concept, analysis, design and field application of various anal structures

Subject	Advanced Traffic Engineering& Management (Elective-IV
code	BTCVE702T
Sr No.	Course Outcome
1	Students should be able to Define and describe various traffic studies and traffic characteristics
2	Students should be able to describe terms related to highway capacity and have knowledge of statistical tools in traffic engineering
3	Students should be able to explain various theories related to traffic flow

Subject	Advance Steel Design (Elective - V)
code	BTCVE703T
Sr No.	Course Outcome
1	Analyze loads acting on bridge and design of members.
2	Analyze industrial building members and their design
3	Analyze industrial building members and their design
4	Analyze loads acting on liquid storing tanks and their design
5	Analyze loads actin on storage vessels and their design.

Subject	Advance Foundation Engineering (Elective-v)
code	BTCVE703T
Sr No.	Course Outcome
1	Analyze the bearing capacity of shallow foundations
2	Analyze and design pile foundations.
3	Evaluate the importance of raft foundation and principles of design for buildings and tower structures
4	Analyse and design Sheet piles and cofferdams.
5	Students should be able to understand the concept of foundations in expansive soils

Subject	Air Pollution & Solid Waste Management (Elective-V)
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code	BTCVE703T
Sr No.	Course Outcome
1	Students will be able to understand different aspects of air pollutants, its sources and effects on man & materials and Meteorological parameters
2	Students will be able to understand methods of air sampling & design equipments for air pollution to reduce its impact on environment
3	Students will be able to understand problems arriving in handling large amount of solid waste generated
4	Students will be able to understand problems arriving in its collection, transportation, and processing & to design safe collection and disposal methods
5	Students will be able to learn emerging technologies for air pollution control

Subject	Precast and Modular Construction Practices (Elective-V)
code	BTCVE703T

Sr No.	Course Outcome
1	Give knowledge of factors to be considered in the design of prestressed concrete structures
2	Give knowledge of the design and manufacturing of Finnish precast concrete products
3	Understand the difference between pre- and post-tensioned systems for structural behaviour
4	Learn to consider specific features of precast concrete structures: connections, stability and prevention of progressive collapse, ductility
5	Learn to consider the influence of time-dependency of materials on structural reliability.

Subject	Hydropower Engineering (Elective-V)
code	BTCVE703T
Sr No.	Course Outcome

1	To understand about the sources of water power and estimation of its potential
2	To learn the concept, design, investigation of power canals and its components
3	To understand the concept, design, investigation about various parts of power units
4	To understand the concept, investigation about various parts of a power house
5	To impart the knowledge about electrical aspects of power unit and understand the importance of these items

Subject	Bridge Engineering (Elective-V)
code	BTCVE703T
Sr No.	Course Outcome
1	To analyze the functional utility of bridges and their components.

2	To determine the forces acting on bridges and to calculate bending moment, shear force etc.
3	To understand the behaviour of components of bridge due to load and able to design it for safety and serviceability
4	To understand the support conditions, the functional utility and use of bearings.

Subject	Design of Earthquake Resistant Structure
code	BTCVE704T
Sr No.	Course Outcome
1	Understand the philosophy of earthquake resistant design.
2	Understand the concept of various effects on structure due to earthquake.
3	Evaluate seismic forces for various structures as per relevant Indian standards

4	Design and ductile detailing of structures for seismic resistance as per Indian standards
5	Apply the concepts of repair and rehabilitation of earthquake affected structures

Subject	Advance Engineering Geology (ELECTIVE-VI)
code	BTCVE704T
Sr No.	Course Outcome
1	Apply engineering geological concepts and approaches on rock engineering projects.
2	Explain soil profile, geo-hydrological characters of various rock formations and necessity of geological studies in water conservation.
3	Synthesize and Interpret the geologic data to establish the geological framework needed for design and construction of underground openings
4	Validate the suitability of rocks based on mechanical properties, R.Q.D. and geophysical exploration

5	Illustrate the suitability of proposed alignments for tunnels and bridges on the basis of Geological investigations.
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Subject	Water & Wastewater Treatment (Elective-VI)
code	BTCVE704T
Sr No.	Course Outcome
1	Understand the process and design components of water treatment such as Aeration, coagulation-flocculation and Sedimentation
2	Understand the process and design the components of water treatment such as Filtration, Disinfection
3	Understand the various sources characteristics and disposal methods of wastewater
4	Understand and design the different preliminary and primary waste-water treatment
5	Understand and design the different Secondary waste-water treatment

Subject	Forensic In Civil Engineering (Elective-VI)
code	BTCVE704T
Sr No.	Course Outcome
1	Understand various testing methods of Failed Structures
2	Understand the aspects of failures connected with various structural systems and materials.
3	Plan the strategic measures against failures.
4	Can write the legal and technical report of the failure in lucid manner.
5	To impart knowledge about structural failures

Subject	Irrigation Management (Elective-VI)
code	BTCVE704T
Sr No.	Course Outcome
1	Discussion of various principles of irrigation management
2	Study of various methods of canal section design and approaches of optimal canal design
3	Estimation of seepage losses through a canal system and criteria to minimise it
4	Involvement of various stake holders of irrigation system and efficient functioning for the better efficiency of the system
5	Knowing various policies and attempt made by state and central Government for the proper functioning of irrigation system

Subject	Pavement Analysis & Design (Elective-VI)
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code	BTCVE704T
Sr No.	Course Outcome
1	Analyze the stresses and strains in a flexible pavement using multi-layered elastic theory.
2	Design a flexible pavement using IRC, Asphalt Institute, and AASHTO methods
3	Analyze stresses and strains in a rigid pavement using Westergaard's theory.
4	Design a rigid pavement using IRC, and AASHTO methods.
5	Comprehend the concept of strengthening of existing pavements and pavement management system

Madhukarrao Pandav College Of Engineering Bhilewada, Bhandara
Course Outcome
Department of Civil Engineering
8th semester
Course Outcome


Subject	Construction Method and Equipment Management
code	BTCVE 801T
Sr No.	Course Outcome
1	Should have the knowledge about construction industry and construction projects.
2	Should have knowledge about project organization.
3	Should have knowledge about construction planning methods.
4	Should have knowledge about construction labour and equipment management.
5	Should have knowledge about construction materials management.

Subject	Digital Land Surveying & Mapping
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code	BTCVE802T
Sr No.	Course Outcome
1	Know the basics of digital land surveying and its applications
2	Handle the GPS for surveying and plot the details on map.
3	Know the use of DGPS and its applications and advantages.
4	Use total station for land surveying and plotting the details.
5	Use advance software for mapping.

Subject	Project Work Phase-II
code	BTCVE804P

Sr No.	Course Outcome
1	Analyze or Design the Civil Engineering problems by using appreciate methodology in a team work.
2	Interpret the communication skills of team members
3	Use of Modern tools in the field of Civil Engineering


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Department of Civil Engineering
Madhukarrao Pandav College Of
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MADHUKARRAO PANDAV COLLEGE OF ENGINEERING BHANDARA
DEPARTMENT OF MECHANICAL ENGINEERING
B.Tech THIRD SEMESTER (New CBCS)
COURSE OUTCOMES
(CO'S)

Subject :	Applied Mathematics-III (Theory)
Code:	BTME301T
Sr. No.	Course Outcome
CO301.1	Apply Laplace Transform to solve ordinary differential equations, Integral equations and Integral- differential Equations.
CO301.2	Apply Fourier series in the analysis of periodic functions in terms sine and cosine encountered in engineering problems and Fourier Transform to solve integral equations.
CO301.3	Learn the concept of differentiating, integrating and expanding of analytic functions in complex numbers and their applications such as evaluation of integrals of complex functions
CO301.4	Solve partial differential equations of first order, higher order with constant coefficients and of second order using method of separation of variables.
CO301.5	Analyze real world scenarios to recognize when matrices are appropriate, formulate problems about the scenarios, creatively model these scenarios in order to solve the problems using multiple approaches

Subject :	Manufacturing Processes
Code:	BTME302T
Sr. No.	Course Outcome
CO302.1	Understand the importance of manufacturing processes, techniques of pattern making and moulding with their properties. Design gating system along with selection of different types of melting furnaces and special casting process.
CO302.2	Get acquainted with the basic concept of joining process, welding process and its types, defects and application.
CO302.3	Get acquainted with the forming process for metal, mechanics of forming process along with different types of rolling machine.
CO302.4	Understand and define press working process along with its classification, types and terminology, different types of dies and introduction to shaping operation.
CO302.5	Understand introduction to plastics, ceramics and glasses, its properties, application, forming and its shaping.

Subject :	Manufacturing Processes
Code:	BTME302P
Sr. No.	Course Outcome

CO302.1	Think in core concept of their engineering application by studying various topics involved in branch specific applications.
CO302.2	Understand the relevance and importance of the different manufacturing techniques and real life application in industry.
CO302.3	Design the gating and riser system needed for casting and requirements to achieve defect free casting.
CO302.4	Analyze the welding process behavior and requirements to achieve sound welded joint while welding different similar and dissimilar engineering material.
CO302.5	Understand the plastic, glass and ceramic processing.
Subject :	Fluid Mechanics
Code:	BTME303T
Sr. No.	Course Outcome
CO303.1	Analyze fluid behaviors based on properties and identify fluid flow types in practical
CO303.2	Apply fluid statics principles to assess pressure distributions, determine buoyance, and analyze stability.
CO303.3	Demonstrate proficiency in solving fluid dynamics problems using the Navier-Stokes equation, Bernoulli's equation, and related principles in various engineering scenarios.
CO303.4	Differentiate laminar and turbulent flows, apply dimensional analysis techniques, and interpret dimensionless parameters.
CO303.5	Calculate energy losses in pipes, understand fluid behavior in series and parallel configurations, and analyze lift and drag forces.

Subject :	Kinematics Of Machines (T)
Code:	BTME304T
Sr. No.	Course Outcome
CO304.1	Perform kinematic and dynamic analysis (Displacement, Velocity, acceleration, Inertia forces) of a given mechanism using analytical and graphical method.
CO304.2	Understand the concept of compliant mechanisms.
CO304.3	Contrive or synthesize new mechanisms for specific requirements and Perform computer aided analysis of simple mechanisms.
CO304.4	Construct cam profiles and analyse the follower motion.
CO304.5	Understand Geometry of gear, its types, analysis of forces and motions of gear teeth. Study of gear trains and governors.

Subject :	Material Science and Engineering (T)
Code:	BTME306T
Sr. No.	Course Outcome
CO306.1	To impart knowledge for analyzing different microstructure and crystalline nature of metals.
CO306.2	To impart knowledge of iron – iron carbide equilibrium diagram and microstructure of commercial steels and cast iron.
CO306.3	To provide the knowledge of various heat treatment processes.
CO306.4	To provide basic knowledge of non-ferrous alloys.
CO306.5	To impart basic knowledge of powder metallurgy for powder metallurgical components.

Subject :	Manufacturing Processes (P)
Code:	BTME302P
Sr. No.	Course Outcome
CO302P.1	Think in core concept of their engineering application by studying various topics involved in branch specific applications.
CO302P.2	Understand the relevance and importance of the Different manufacturing techniques and real life application in industry.
CO302P.3	Design the gating and riser system needed for casting and requirements to achieve defect free casting.
CO302P.4	Analyze the welding process behavior and requirements to achieve sound welded joint while welding different similar and dissimilar engineering material
CO302P.5	Understand the plastic, glass and ceramic Processing

Subject :	Machine Drawing and Solid Modeling
Code:	BTME305P
Sr. No.	Course Outcome
CO305P.1	Create 2-D orthographic manual drawings as well as digital drawing using CAD software package of standard machine components
CO305P.2	Apply standard practices for creation of 2-D orthographic manual drawings as well as digital drawing using CAD software package of assembly with dimension detailing, part list and ballooning. Also perform 2-D detailing of assembly components.
CO305P.3	Create 3-D solid model and 2-D detailing of simple parts using CAD software package and perform 2-D detailing.
CO305P.4	Create production drawing and process sheet for standard machine components.
CO305P.5	Get hands on experience of reverse engineering process and concepts.

Subject :	Skill Development - Basics of Computer Aided Drafting
Code:	BTME307P
Sr. No.	Course Outcome
CO	Students will learn <ul style="list-style-type: none">• How to create simple parts, assemblies and drawings.• How to use different feature-based tools to build, review and modify a model.• How to create and analyze assemblies and how to produce a drawing with different views.• Learn how to dimension the drawing and annotate the views.

H.O.D.



H.O.D.

**Department of Mechanical Engineering
Madhukarrao Pandav College of
Engineering, Bhilewada, Bhandara**

**MADHUKARRAO PANDAV COLLEGE OF ENGINEERING BHANDARA DEPARTMENT OF
MECHANICAL ENGINEERING
B.Tech FOURTH SEMESTER
(NEW CBCS)
COURSE OUTCOMES(CO'S)**

Subject :	Machining Processes
Code:	BTME401T
Sr. No.	Course Outcome
CO401.1	Understand fundamentals of metal cutting
CO401.2	Understand basic construction and operations of lathe shaping, planning
CO401.3	Understand basics of milling and milling cutters. slotting
CO401.4	To know about the surface finishing processes.
CO401.5	Understand the basic of drilling, boring, reaming and broaching.
Subject :	Hydraulic Machines
Code:	BTME402T
Sr. No.	Course Outcome
CO402.1	Classify turbomachine, components of HEPP, Design of Pelton wheel
CO402.2	Design of Francis and kaplan Turbine, Governing OF turbine
CO402.3	Design of centrifugal Pumps
CO402.4	Design of reciprocating Pumps
CO402.5	Learn miscellaneous Water Lifting Device

Subject :	Mechanics Of Material
Code:	BEME403T
Sr. No.	Course Outcome
CO403.1	Demonstrate fundamental knowledge about various types of loading and stresses induced
CO403.2	Draw the SFD and BMD for different types of loads and support conditions.
CO403.3	Estimate the strain energy in mechanical elements. And analyse the deflection in beams.
CO403.4	Can design shaft for various loading conditions.
CO403.5	Understand theory of failure and effective designing of column and Struts.

Subject :	Engineering Thermodynamics
Code:	BTME404T
Sr. No.	Course Outcome
CO404.1	thermodynamic processes and apply the laws to determine the energy transfer in terms of heat and work
CO404.2	Explain the first law of thermodynamics and apply the law to evaluate open, closed systems, thermal components and devices.
CO404.3	Interpret the second law of thermodynamics, entropy, and apply the law to evaluate heat engine, heat pump, and refrigerator performance.
CO404.4	Relate various steam properties, and analyze the different types of processes using steam as working fluid to determine the energy transfer in terms of heat and work.
CO404.5	Compare various power cycles and analyze the cycles to determine the energy transfer in terms of heat, work and efficiency.

Subject :	Computer Programming
Code:	BTME405P
Sr. No.	Course Outcome
CO405.1	Understand and explore concepts in basic programming like data types, input/output functions, operators, programming constructs and user defined functions.
CO405.2	Develop capabilities of writing “C” programs in optimized, robust and reusable code
CO405.3	Apply appropriate concepts of data structures like arrays, structures implement programs for various applications.

Subject	Machining Processes
Code:	BTME401P
Sr. No.	Course Outcome
CO401P.1	Understand basic cutting tools.
CO401P.2	Working of lathe and turning operation
CO401P.3	Shaping and planing operation
CO401P.4	Milling and drilling operation
CO401P.5	Grinding and surface finishing

Subject	FLUID MECHANICS & HYDRAULIC MACHINES (Practical)
Code:	BTME402P
Sr. No.	Course Outcome
CO402.1	Explain what is Stability condition of floating bodies, Law of conservation of Energy.
CO402.2	Apply Frictional losses and Hydraulic co-efficient in the pipe flow.
CO402.3	Estimate the Performance characteristics of Pelton Turbine
CO402.4	Estimate the Performance characteristics of Francis Turbine & Kaplan Turbine.
CO402.5	Estimate the Performance characteristics of Centrifugal Pump & Reciprocating Pump.

Subject	Material Testing Lab- (Practical)
Code:	BTME404P
Sr. No.	Course Outcome
CO404.1	Analyze the Microstructure and investigate various properties of ferrous and Non ferrous Materials . Analyse the stress strain behaviour of materials
CO404.2	Analyse the effect of tensile, shearing force and can utilized the gained while tackling real life engineering problems for different types of Materials
CO404.3	Understand Microstructures and their Applications for various uses
CO404.4	Measure torsional strength , hardness of material
CO404.5	Incorporate the various important concepts learnt while designing components

Subject	Computer Programming (Practical)
Code:	BTME405P
Sr. No.	Course Outcome
CO405.1	Understand and explore concepts in basic programming like data types, input/output functions, operators, programming constructs and user defined functions.

CO405.2	Develop capabilities of writing "C" programs in optimized, robust and reusable code.
CO405.3	Apply appropriate concepts of data structures like arrays, structures implement programs for various applications.

Subject	Professional Ethics
Code:	BTME406T
Sr. No.	Course Outcome
CO406.1	Understand basic purpose of profession, professional ethics and various moral and social issues.
CO406.2	Analyze various moral issues and theories of moral development.
CO406.3	Realize their roles of applying ethical principles at various professional levels.
CO406.4	Identify their responsibilities for safety and risk benefit analysis.
CO406.5	Understand their roles in dealing various global issues.

Subject	Skill Development (Training on MATLAB)
Code:	BTME407T
Sr. No.	Course Outcome
CO	After successful completion of this course the student will be able to use MATLAB to develop, design, simulate, and test their models before it can be developed in the real world. In the field of mechanical engineering, MATLAB will be used for solving problems related to dynamic and static systems, mechanical vibrations, control systems, statics and more.

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MADHUKARRAO PANDAV COLLEGE OF ENGINEERING BHANDARA
DEPARTMENT OF MECHANICAL ENGINEERING
B.Tech FIFTH SEMESTER (NEW CBCS)
COURSE OUTCOMES

Subject :	Heat Transfer
Code:	BEME501T
Sr. No.	Course Outcome
CO501.1	Students will be able to define and compare the different modes of heat transfer and calculation of thermal resistance and heat transfer through plane and composite wall, cylinder and sphere with and without thermal contact resistances.
CO501.2	Students will be able to apply the concept of internal heat generation for the calculation of heat transfer for plane wall, cylinder and sphere and also learn about various types of fins and their significance in steady state conduction heat transfer calculations. It will also help them to understand the concept of unsteady state heat transfer.
CO501.3	Students will be able to select and apply appropriate empirical correlations to estimate forced convection and free convection heat transfer, for internal and external flows.
CO501.4	Students will be able to evaluate heat transfer rate by radiation from ideal and actual surfaces and enclosures of different geometries.
CO501.5	Students will be able to evaluate heat exchanger performance for the given geometry and boundary conditions and design suitable heat exchanger geometry to deliver a desired heat transfer rate.

Subject :	Heat Transfer Lab (Practical)
Code:	BTME501P
Sr. No.	Course Outcome
CO501P.1	Students will be able to determine the heat transfer rates through various cross-sections and mediums in different modes.
CO501P.2	Student will be able to acquire, tabulate, analyze experimental data, and draw interpretation and conclusions
CO501P.3	Student will be able to calculate radiation heat transfer and utilize that knowledge in designing any heat transfer application
CO501P.4	Student will be able to understand heat exchanger analysis.
CO501P.5	Student will be able to select the proper heat exchangers per system requirements.

Subject :	Energy Conversion-I
Code:	BTME502T
Sr. No.	Course Outcome
CO502.1	Explain, classify, analyze layout of power plant, cogeneration principle of steam generators (i.e.Boilers), boiler mountings & accessories and evaluate performance parameters of boiler.
CO502.2	Explain the concepts of fluidized bed boilers and various draught system and evaluate performance parameters of natural draught system(i.e. chimney)
CO502.3	Explain the importance of steam nozzle and determine its throat area, exit area, exit velocity. Also compare impulse and reaction steam turbines and explain the concept of governing of steam turbine
CO502.4	Explain the methods of compounding of steam turbine, various energy losses in steam turbine and able to draw velocity diagrams of steam turbine blades to analyze the angles of the blades, work done, thrust, power, efficiencies of turbine.
CO502.5	Explain, classify steam condensers, cooling towers and evaluate performance parameters of surface condenser.

Subject	Design Of Machine Elements
Code:	BTME503T
Sr. No.	Course Outcome
CO503.1	Apply principals of static loading for design of Cotter joint, Knuckle joint
CO503.2	Design bolted, welded joints, power screws & pressure vessels
CO503.3	Design the power transmission shaft & coupling
CO503.4	Design components subjected to fatigue or fluctuating stresses. Also, will be able to apply principles for determining bending stresses for design of curved beams e.g. crane hook, C-Frame.
CO503.5	Design clutches, brakes and springs

Subject :	Mechanical Measurement and Metrology
Code:	BTME505T
Sr. No.	Course Outcome
CO505.1	Students will be able to analyze statistical characteristic of systems.
CO505.2	Students will be able asses the system response.

CO505.3	Students will be able to understand the instrumentation process.
CO505.4	Students will be able to understand limits fits and tolerance.
CO505.5	Students will learn the basics of various metrology measurement terms and techniques

Subject :	Mechanical Measurement and Metrology Lab
Code:	BTME505P
Sr. No.	Course Outcome
CO505.1	Students will be able to perform the instrumentation.
CO505.2	Students will be able to use the instrumentation for measurement of thermal properties.
CO505.3	Students will be able obtain the response from the instruments also can be able to calibrate the instruments.
CO505.4	Students will be able to calculate the limits and allowances to obtain the proper fit.
CO505.5	Students will be able to calculate the limits and allowances to obtain the proper fit. Students will able to identify the surface roughness using optical flat.

Subject :	Industrial Visit
Code:	BTME506P
Sr. No.	Course Outcome
CO506.1	Opportunity to interact with industry experts.
CO506.2	Learning experience.
CO506.3	Enhanced employability and PPO's.
CO506.4	Interpersonal skills enhancement.
CO506.5	Acquire in depth knowledge about industries & innovative technologies employed.

Subject :	Performing Art
Code:	BTME507P
Sr. No.	Course Outcome

CO507.1	<ul style="list-style-type: none">• Empower the students in problem solving skills.• The ability to analyze things and communicate them in the right way is taught.• These skills are very much essential to get employed in reputed companies and most of the companies prefer candidates with the mentioned skills.• It helps in selecting future options.
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MADHUKARRAO PANDAV COLLEGE OF ENGINEERING BHANDARA
DEPARTMENT OF MECHANICAL ENGINEERING
B.Tech SIXTH SEMESTER (NEW CBCS)
COURSE OUTCOMES (CO'S)

Subject	Automation In Production
Code:	BTME601T
Sr. No.	Course Outcome
CO601.1	Get Acquainted with Automation, Its Type's ,Strategies , Assembly Line Balancing And Its Analysis, Methods Of Work Part Transport
CO601.2	Recognize fundamentals and constructional features of N.C, CNC and D.N.C machines and prepare a CNC program for given part.
CO601.3	Get Acquainted With The Robotic Configuration, Types Of Links, Joints, Grippers, Industrial Robotics And Robot Applications.
CO601.4	Cultivate Information About Automated Material Handling Systems, Automated Storage And Retrieval System (AGVS,AS/RS) .Its Analysis.
CO601.5	Get Acquainted With Automated Inspection (CAPP, CAQC, CMM) And Group Technology.
CO601.6	Recognize CAD/CAM,CIM,FMS, Understand The Concepts Of Shop Floor Control.

Subject :	Automation In Production Lab
Code:	BTME601P
Sr. No.	Course Outcome
CO601P. 1	Recognize automation, corroborating this knowledge with case studies on automation systems. study and analyze the material handling systems, robots and GT
CO601P. 2	Demonstrate NC programming (manual/apt)
CO601P. 3	Simulate program on CNC milling/ lathe
CO601P. 4	Work on CNC milling/ lathe

Subject :	Energy Conversion - II
Code:	BTME602T
Sr. No.	Course Outcome
CO602.1	Explain, classify & analyze the 1. C. Engine and explain the phenomenon of stages of combustion in S.I & C.1 Engines, knocking, supercharging and fuel supply systems.
CO602.2	Evaluate the performance parameters of I.C. Engine and able to prepare heat balance sheet for I.C. Engine
CO602.3	Explain the working of Refrigeration systems and solve the problems related to single stage vapor compression refrigeration cycle.

CO602.4	Explain the working of Air conditioning systems and solve the simple problems based on psychometric properties and processes.
CO602.5	Explain, classify & compare the Air compressors and evaluate the performance parameters of reciprocating air compressor.

Subject :	Energy Conversion-II
Code:	BTME602P
Sr. No.	Course Outcome
CO602P.1	Understand and identify the different components of I.C. engine, air compressor and Vapour Compression Refrigeration system (VCRS).
CO602P.2	Demonstrate and determine the performance parameters of I.C. engine and preparation of its Heat balance sheet.
CO602P.3	Determine B.E, IP. and F.P. by using Morse Test on Multi cylinder C.I. Engine or S.I. Engine.
CO602P.4	Demonstrate and determine the performance parameters of Vapour Compression Refrigeration system. Analyze the performance parameters of Multistage reciprocating air compressor.
CO602P.5	Analyze the performance parameters of multistage reciprocating air compressor.

Subject :	Dynamics of Machines
Code:	BTME603T
Sr. No.	Course Outcome
CO603.1	Comprehend the machine dynamics through basic principles to interpret their application and examine near to life problems due gyroscopic effects and determine the conditions for stability of ships, airplanes and automobile.
CO603.2	Analyze dynamic force conditions in planer linkages and cams to determine required driving torque condition (graphically/ analytically).
CO603.3	Estimate the unbalanced forces due to rotating and reciprocating masses in a mechanical system and calculate (graphically/ analytically) the balancing masses required for safe/ smooth operation of these mechanical systems.
CO603.4	Identify the requirement of flywheel, brakes, and dynamometers in a mechanical system and calculate inertia of flywheel and braking condition to be incorporated in engines and machines.
CO603.5	Recognize and interpret the concept of vibration in various mechanical systems and distinguish vibration characteristics for 1 & 2 DOF systems to evaluate the conditions for its control/ use.

Subject :	Dynamics of Machines Lab
Code:	BTME603P
Sr. No.	Course Outcome
CO603P. 1	Demonstrate the concept of gyroscopic effect through the working model.
CO603P. 2	Analyze the performance of mechanisms and Perform dynamic force analysis of linkages and cams.
CO603P. 3	Demonstrate record and interpret data of vibration characteristics of mechanical vibratory systems.
CO603P. 4	Perform analysis of brakes, dynamometers and flywheels.
CO603P. 5	Identify the importance of safety, team work and effective communication for conduction of activity.

Subject :	Operation Research (Elective- I)
Code:	BTME604T
Sr. No.	Course Outcome
CO604.1	Recognize the importance and value of Operations Research and mathematical modeling in solving practical problems in industry.
CO604.2	Convert given situation to mathematical form and determine optimal settings.
CO604.3	Understand Operations Research models and apply them to real-life problems;
CO604.4	Manage projects for minimum total cost and smooth level of resources.
CO604.5	Make decisions related to age of replacement of equipment
CO604.6	Develop simulation of real life system to analyze and optimize system concerned.

Subject :	Production Planning and Control (Elective- I)
Code:	BTME604T
Sr. No.	Course Outcome
CO604.1	Understand need of various functions in production planning and control for better management of manufacturing and/or service systems.
CO604.2	Use qualitative and quantitative forecasting techniques for short, medium, and long Range forecasting.
CO604.3	Develop material requirements plans (MRP) as part of resource requirements planning Systems.
CO604.4	Use heuristic decision rules to make lot-sizing decisions.
CO604.5	Develop capacity requirements plans as part of resource requirements planning systems
CO604.6	Develop quantitative models to manage independent demand inventory systems.

Subject :	Tool Design (Elective- I)
Code:	BTME604T
Sr. No.	Course Outcome
CO604.1	Design single point and multi-point cutting tools.
CO604.2	Design various press working cutting operation dies for given sheet metal parts, also will be able to suggest heat treatment cycle for these dies.
CO604.3	Understand terminologies and design considerations related to press working bending, forming and drawing dies
CO604.4	Explain and classify various forging dies and design machine forging dies.
CO604.5	Design simple blow and injection molds for plastic parts.

Subject :	Renewable Energy Resources (Elective- I)
Code:	BTME604T
Sr. No.	Course Outcome
CO604.1	Recognize the need of renewable energy sources.
CO604.2	Understand various solar thermal energy conversion systems and solar photovoltaic systems in detail.
CO604.3	Describe different biogas plants, bio-diesel production method and potential of hydrogen as a fuel.
CO604.4	Explain the working principle of wind energy systems and ocean thermal energy conversion systems
CO604.5	Describe the working of fuel cell system, Geothermal and Magneto Hydro dynamic (MHD) power generations systems and understand the principles of energy conservation.

Subject :	Advanced Manufacturing Techniques (Elective- II)
Code:	BTME605T
Sr. No.	Course Outcome
CO605.1	Understand and compare the different Non-Traditional machining process with their need, economics and application as well as historical development. Understand the basics of High speed grinding, Hot and Cold machining.
CO605.2	Understand the basics of Abrasive Jet Machining (AJM), Ultrasonic Machining process and Water Jet Machining
CO605.3	Get acquainted with the Electro-Chemical Machining, Electrochemical Grinding, Electric Discharge Machining. Get acquainted with the Electron Beam, Laser Beam and Plasma Arc Machining.
CO605.4	Know the basics of unconventional welding techniques and Solid Phase welding techniques.
CO605.5	Get acquainted with the basics of advance casting processes.

Subject :	Power Plant Engineering (Elective- II)
Code:	BTME605T
Sr. No.	Course Outcome
CO605.1	Student will able to understand the components, fuel and its associated terminologies and complete working of steam power plant .Also will be able to learn about advantages, drawbacks and environmental impact .
CO605.2	Students will get acquainted with working of Gas Turbine power plant and Diesel electric power plant, their comparison with other power plants and also Introduce to captive power plant.
CO605.3	Student will be able to understand the complete working of hydroelectric power plant ,its advantages and comparison with other power plants.
CO605.4	Student will be able to understand the importance of Nuclear power generation in India, working of various nuclear reactors and complete working of nuclear power plant, waste disposal and its impact on environment and also its comparison with other power plants.
CO605.5	Student will be able to understand the concept of combined power plant and gets acquainted with the emerging power generation technologies. Also will able to undertake the power load analysis and economic analysis of power generation system.

Subject :	Supply Chain Management (Elective- II)
Code:	BTME605T
Sr. No.	Course Outcome
CO605.1	Identify scope and importance of supply chain management.
CO605.2	Understand difference between transportation & Distribution & their channels.
CO605.3	Plan for inventories leading to shorter delivery and sourcing time
CO605.4	Implement strategies and classify them according to requirements.
CO605.5	Plan activities and documentation requirements along with MIS.

Subject :	Introduction to Artificial Intelligence (Elective- II)
Code:	BTME605T
Sr. No.	Course Outcome
CO605.1	Demonstrate knowledge of the building blocks of AI as presented in terms of intelligent agents.
CO605.2	Analyze and formalize the problem as a state space, graph, design heuristics and select amongst different search or game based techniques to solve them.
CO605.3	To create an understanding of the basic issues of knowledge representation
CO605.4	Formulate and solve problems with uncertain information using Bayesian approaches.
CO605.5	Attain the capability to represent various real life problem domains using logic based techniques and

Subject :	Entrepreneurship Development (Open Elective- I)
Code:	BTME606T
Sr. No.	Course Outcome
CO606.1	Apply the knowledge of entrepreneurship qualities and skills to startup a business.
CO606.2	Apply the knowledge of entrepreneurship policies to startup a business.
CO606.3	Prepare a feasibility report and evaluation criteria for and entrepreneurship.
CO606.4	Analyze marketing strategies of entrepreneurship.
CO606.5	Apply preventive measures to be followed for effective management of Entrepreneurship.

Subject :	Automobile Engineering (Open Elective- I)
Code:	BTME606T
Sr. No.	Course Outcome
CO606.1	Demonstrate the vehicle construction, chassis, fuel supply system, lubrication system and cooling system in automobile.
CO606.2	Illustrate the principle and working of Transmission system and clutch, gear box, rear axle drives, fluid flywheel, torque converter.
CO606.3	Identify the steering, suspension system and brake system.
CO606.4	Understand the applications of electrical/electronic system of automobile and wheels, tyres.
CO606.5	Explain the concept of electric vehicles, Hybrid vehicles, fuel cell vehicles and vehicle pollution norms. Appraise the automobile safety system and recent development in automobiles.

Subject :	Project Evaluation & Management (Open Elective- I)
Code:	BTME606T
Sr. No.	Course Outcome
CO606.1	Utilize the use of a structured approach for each and every unique project undertaken including utilizing project management concepts, tools, and techniques
CO606.2	Apply participatory methods to project management.
CO606.3	Estimate network scheduling and network planning
CO606.4	Manage lifecycle on the various phases from project initiation through closure
CO606.5	Estimate project Costs. Earned Value Analysis, Monitoring Project Progress and Project Appraisal

Subject :	Operation Research & Techniques (Open Elective- I)
Code:	BTME606T
Sr. No.	Course Outcome
CO606.1	Formulate and obtain the optimal solution for Linear Programming problems.
CO606.2	Identify, formulate and obtain optimal solution using transportation and assignment model
CO606.3	Formulate Network models for service and manufacturing systems, and apply operations research techniques and algorithms to solve these Network problems
CO606.4	Optimize the problem using Queuing model and Inventory model.
CO606.5	Optimally arrange the machine job in a sequence and also simulate the real life problem.

Subject :	Industrial Safety & Environment (Open Elective- I)
Code:	BTME606P
Sr. No.	Course Outcome
CO606.1	Gain the knowledge about industrial safety protocols and its different dimensions.
CO606.2	Know about an administrative angle of the industrial safety.
CO606.3	Understand the legal aspects of the safer
CO606.4	Acknowledge the safe working practices.
CO606.5	Be aware of emergency preparedness in work environment.

Subject :	Environment Science
Code:	BTME607P
Sr. No.	Course Outcome
CO607.1	This course provides an integrated and interdisciplinary approach to the study of environment and solutions to environmental problems. This course will spread awareness among the students about environmental issues and shall alert them to find solutions for sustainable development.

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MADHUKARRAO PANDAV COLLEGE OF ENGINEERING, BHILEWADA,
BHANDARA DEPARTMENT OF MECHANICAL ENGINEERING
B-TECH 7th sem
COURSE OUTCOMES CO

BTME701T	Elective – III: Mechatronics (Theory)
CO-1	Identify scope and elements of mechatronics design process and types of control system.
CO-2	Study various actuating systems of mechatronic applications.
CO-3	Identify system interfacing requirements and data acquisition using signal conditioning and signal processing techniques.
CO-4	Study digital logic for development of microprocessor
CO-5	Development of ladder diagram and programming using PLC for interfacing between hardware and software.

BTME701P	Elective – III: Mechatronics (Practical)
CO-1	Identify and explain various solid state electronic devices, sensors and actuators.
CO-2	Describe and demonstrate the conversion of signal from Analog to digital and vice versa.
CO-3	Implement ladder logic programming using PLC to develop various mechatronics applications.
CO-4	Interpret and demonstrate various electro-pneumatic and electro-hydraulic systems using graphical symbols and circuit diagram.
CO-5	Identify and explain various solid state electronic devices, sensors and actuators.

BTME701T	Elective – III: Computer Aided Design (Theory)
CO-1	To design graphic system by selecting appropriate input output devices for any graphical applications. Also, develop a logic for various geometrical entities used in modeling software by giving appropriate mathematical treatment, put it into an algorithm and convert an algorithm into a computer program.
CO-2	To develop a logic for various transformations on any 2D & 3D geometric objects giving appropriate mathematical treatment, put it into an algorithm and convert an algorithm into a computer program.
CO-3	To Explain the different geometric modeling techniques, synthetic curves & methods of assembly modeling. Also understand parametric representation of space curves and surfaces.
CO-4	To understand numerical analysis technique called finite element method and apply it on one dimensional problem to determine various field variances.
CO-5	Apply finite element method on truss and beams to determine various fields variances such as nodal displacement, reaction force, element stress etc.

BTME701P	Elective – III: Computer Aided Design (Practical)
CO-1	Write logic in the form of an algorithm to construct geometric entities and generate a computer program for the same.
CO-2	Develop finite element model of an engineering problem, apply loading conditions and boundary conditions, and solve it for analysis of its performance in simulated condition using Analysis software.
CO-3	Write computer program for 2D and 3D Transformation on any object.
CO-4	Generate 2-D and 3-D geometric model of Engineering object using construction and modifying commands using CAD software.

BTME701T	Elective – III: Advancements in Automobile Engineering (Theory)
CO-1	Classify and identify the main components of automobile. Explain the construction and working of I. C. Engine, fuel supply systems, cooling systems and lubrication systems used in automobile.
CO-2	Illustrate the functions of different types of automobile clutches and gear boxes and their applications. Explain the working of transmission system, its components such as propeller shaft, drives, differential and axles.
CO-3	Describe the working of different steering systems, steering gear boxes and suspension systems. Identify the different components of steering, suspension and brake systems with their comparisons and applications.
CO-4	Demonstrate the importance of safety considerations in automobiles and outline the recent technological development in automotive safety. Describe the automobile maintenance, Trouble shooting, service procedures, Overhauling and Engine tune up.
CO-5	Explain the working of Electric Car, Hybrid Electric vehicles and Fuel cell vehicles. Describe the importance of Alternative energy sources, Vehicle Pollution norms and different methods of pollution control.

BTME701P	Elective – III: Advancements in Automobile Engineering Lab (Practical)
CO-1	Make students understand the basic concepts, requirement and working of various components of automobile.
CO-2	Make students understand the assembling and disassembling procedure of Engine, clutch, brakes and the process of wheel alignment, balancing and battery testing.
CO-3	Enable students to understand and identify components of transmission system, brakes, steering and suspension systems.
CO-4	Aware students about automotive electronics and recent technologies used in automobiles.
CO-5	Aware students about the importance of safety considerations in automobiles, automobile maintenance and overhauling.

BTME701T	Elective – III: Computational Fluid Dynamics (Theory)
CO-1	Interpret the governing equations of the fluid flow, heat transfer & their applications.
CO-2	Choose methods and analysis techniques used in computational solutions of fluid mechanics and heat transfer problems.

CO-3	Explain the interaction of physical processes and numerical techniques.
CO-4	Develop mathematical model and write algorithms for the different fluid flow and heat transfer problems.
CO-5	Apply Finite differences and finite volume techniques.

BTME701P	Elective – III: Computational Fluid Dynamics Lab (Practical)
CO-1	Explain the fundamentals of fluid flow and thermal simulations
CO-2	Select different boundary conditions, mesh generation techniques to simulate fluid flow and thermal problem.
CO-3	Solve fluid flow and thermal analysis problems using commercial software package for different geometry and configurations.
CO-4	To analyze the results obtained using postprocessing to make meaningful inferences.

BTME702T	Energy Conversion III (Theory)
CO-1	Students will be able to analyze the gas turbine and jet propulsion system on varied operating conditions.
CO-2	Students will be able to recognize the hydraulic pumps and valves and can able to logically design the hydraulic circuit.
CO-3	Students will be able to recognize the air compressors and pneumatic control valves and can able to logically design the pneumatic circuit.
CO-4	Students will be able to understand solar power and future opportunities in solar power systems.
CO-5	Students will learn the basics of various non-conventional energy sources and their applications.

BTME703T	Open Elective – II: Introduction to Electric Vehicles (Theory)
CO-1	Explain the basics of electric vehicles, their architecture, technologies and fundamentals.
CO-2	Interpret the working of different electrical equipment in electric vehicles.
CO-3	Explain the use of different energy storage systems used electric vehicles, their control techniques.
CO-4	Understand the control and configurations of EV charging stations and know how of various energy management strategies.
CO-5	Outline the policies and regulations for electric vehicles in global and Indian scenario

BTME703T	Open Elective – II: Waste management (Theory)
CO-1	Understand different aspects of solid waste, its sources and effects on man and material etc.
CO-2	Understand problems arriving in handling large amount of solid waste generated ,its collection and transportation, processing and will able able to design safe collection and disposal methods.
CO-3	Design methods and equipments for solid waste management to reduce its impact on environment.
CO-4	Evaluate and Analyze hazardous waste.

CO-5	Design the appropriate disposal systems for hazardous wastes management.
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BTME703T	Open Elective – II: Finance and Cost Management (Theory)
CO-1	Apply the knowledge of basics of Financial Management concepts and Time Value of Money
CO-2	Select, classify, analyze and plan the sources of finance, types of capital, various elements of costs, cost control and evaluate equipment replacement policy, make or buy decisions.
CO-3	Develop and interpret books of Accounts, Trial Balance, balance Sheet, P&L account, cash flow statement in business
CO-4	Evaluate and examine various Cost of Capital, opportunity cost of capital, Cost of different sources of finance
CO-5	Evaluate, select and determine various techniques of capital budgeting, profitability index.

BTME703T	Open Elective – II: Industrial Robotics (Theory)
CO-1	Understand history and classification of robots.
CO-2	To know about robot end effectors and grippers.
CO-3	Understand direct and inverse kinematics.
CO-4	Understand the types of robot sensors and its applications.
CO-5	To know the cell layouts of robots and its interface.

BTME703T	Open Elective – II: Introduction to Renewable Energy Resources (Theory)
CO-1	Recognize the need of renewable energy sources.
CO-2	Understand various solar thermal energy conversion systems and solar photovoltaic systems in detail.
CO-3	Describe different biogas plants, bio-diesel production method and potential of hydrogen as a fuel.
CO-4	Explain the working principle of Wind energy systems and ocean thermal energy conversion systems
CO-5	Describe the working of Fuel cell system, Geothermal & Magneto hydro dynamic (MHD) power generation systems and Understand the principles of energy conservation.

BTME704T	Design of Transmission Systems (Theory)
CO-1	Design journal and thrust bearings and selection of standard rolling contact bearings.
CO-2	Design flexible transmission drives like belts, chains and rope.
CO-3	Design the positive transmission drives like gears as spur and Helical Gear.
CO-4	Design the positive transmission drives like gears as worm and Bevel Gears.
CO-5	Design the energy storing components like Flywheels for various applications.

BTME706P	Project Phase I
CO-1	Convert their conceptual ideas into working projects .

CO-2	Explore the possibility of publishing papers in journal.
CO-3	Enhance their knowledge through an on-line collection of evidence, work and other information.
CO-4	Ultimately promotes for inter-personal communication, punctuality, demonstration of appropriate written and oral communication skills with overall Work-Integrated-Learning.
CO-5	Develop an understanding of social, cultural, professional, ethical, global and environmental responsibilities of the professional Engineer.

H.O.D



H.O.D.

**Department of Mechanical Engineering
Madhukarrao Pandav College of
Engineering, Bhilewada, Bhandara**

MADHUKARRAO PANDAV COLLEGE OF ENGINEERING, BHILEWADA,
BHANDARA DEPARTMENT OF MECHANICAL ENGINEERING
B-TECH 8th sem
COURSE OUTCOME

BTME801T	Industrial Engineering (Theory)
CO-1	Understanding the concept of productivity and method study.
CO-2	Ability to measure work time and design ergonomic system.
CO-3	To understand the concept of forecasting and breakeven analysis.
CO-4	To analysis maintenance and reliability of equipments.
CO-5	To understand various quality control tools and techniques.

BTME802T	Elective – IV: Finite Element Method (Theory)
CO-1	Understand the application of fundamentals of solid mechanics for evaluation of structural problems for evaluation of Point load, body force, traction and torsional loads.
CO-2	Analyze the application and formulation of the basic finite elements for static and truss.
CO-3	Analyze the beam subjected to transverse loading condition.
CO-4	Apply the mathematical models for the solution of common engineering problems using finite element methods i.e., formulation of simple & complex problems using finite elements and to develop the ability to generate the governing finite element equations for systems regulated by partial differential equations.
CO-5	Remember the significance and difference between the formulation and application of thermal engineering problems using 1D & 2D finite elements.

BTME802P	Elective – IV: Finite Element Method (Practical)
CO-1	Analyze the finite element problems using commercial software and understand the fundamental use of finite element preprocessor, solver and post-processor.
CO-2	Demonstrate the ability to evaluate and interpret Finite Element Analysis results for the design and evaluation of 1D and 2D finite element formulations.
CO-3	Understand the Finite Element Modeling aspects of the Frequency response problem for solving engineering design problems.

BTME802T	Elective – IV: Computer Integrated Manufacturing (Theory)
CO-1	To understand integration of business function with manufacturing planning and control.
CO-2	To apply fundamentals of robotics or industrial applications.
CO-3	To develop CNC programs for manufacturing applications.
CO-4	To understand the process of Group technology for Flexible manufacturing system.
CO-5	Get Acquainted With Automated Inspection (CAPP, CAQC, CMM) And Group Technology.

BTME802P	Elective – IV: Computer Integrated Manufacturing (Practical)
CO-1	Ability to Recognize automation and CIM ,CIM wheel, hardware, software, components of CIM.
CO-2	The student will have ability to apply fundamentals of G.T and FMS
CO-3	The student will have ability to apply fundamentals of CAPP and CAQC
CO-4	The student will have ability to develop CNC programs for manufacturing applications.

BTME802T	Elective – IV: Refrigeration & Air-conditioning (Theory)
CO-1	Understand the basics concepts of refrigeration, and Analyze refrigeration cycle and refrigerants.
CO-2	Understand the concept of vapour absorption refrigeration, air refrigeration system and cryogenics.
CO-3	Understand the concept of psychrometry and analyze heat load calculations.
CO-4	Understand the concept of air- distribution and air handling units.
CO-5	Understand the design and selection of AC System. Control devices for air-conditioning systems.

BTME802P	Elective – IV: Refrigeration & Air-conditioning(Practical)
CO-1	Evaluate the performance of vapour compression refrigeration systems.
CO-2	Analyse the components of refrigeration system and Absorption Refrigeration System.
CO-3	Synthesize the concept of compound refrigeration system.
CO-4	Understand the maintenance and analysis of refrigeration system.
CO-5	Identify the concept of Psychrometry and comfort air conditioning.

BTME802T	Elective – IV: CNC & Robotics (Theory)
CO-1	Apply basic concepts of NC, CNC and DNC
CO-2	Apply programme using manual part programming technique and APT for CNC lathe and machine.
CO-3	Identify the basic fundamentals of industrial robots.
CO-4	Design kinematics of 2 DOF and 3 DOF of 2D manipulators.

CO-5	Select of appropriate robot for particular application.
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BTME802P	Elective – IV: CNC & Robotics Syllabus (Practical)
CO-1	Understand the programming of CNC and Robotic system.
CO-2	Understand advanced material handling system.
CO-3	Recognize automation, sensors and controller technology.

BTME803T	Elective – V: Heating Ventilation and Air-conditioning (Theory)
CO-1	Explain the most important concepts about HVACR and operation of HVAC systems.
CO-2	Estimate the heating and cooling load of a building.
CO-3	Analyse and design different air and water distribution systems related to HVAC systems.
CO-4	Evaluate the performance of an HVAC system and the energy use of a building.
CO-5	Estimate Building Energy and Modeling Methods.

BTME803T	Elective – V: Electric & Hybrid Vehicles (Theory)
CO-1	Explain the basics of electric and hybrid electric vehicles, their architecture, technologies and vehicle dynamics fundamentals.
CO-2	Analyze the use of different power electronics converters in hybrid electric vehicles.
CO-3	Interpret the working of different electrical equipment in electric vehicles and hybrid vehicle configurations.
CO-4	Explain the use of different energy storage systems used for hybrid electric vehicles, their control techniques, and select appropriate energy balancing technology.
CO-5	Understand the control and configurations of HEV charging stations.

BTME803T	Elective – V: Design of Material Handling System (Theory)
CO-1	Constructional and operational characteristics and design of trolley.
CO-2	Constructional and operational characteristics and design of ropeway.
CO-3	Constructional and operational characteristics and design of cranes.
CO-4	Concept of AGV bulk solid conveying system.
CO-5	Concept of Gravity ,powered and vibrating conveying system.

BTME803T	Elective – V: Total Quality Management (Theory)
CO-1	To develop understanding of Quality concepts.
CO-2	Practically implement the Total Quality Principles to employees and supplier partnership.
CO-3	Understanding of Statistical Process Control and Process Capability for enhancement of quality.
CO-4	Practically implement the tools for Total Quality Principles .
CO-5	Develop Understanding of Quality System , Quality Audits, Leadership & quality council & overview of software used for TQM.

BTME804T	Elective – VI: Industrial Internet of Things (IOT) (Theory)
CO-1	To select sensors as per the industry based IoT applications including in-sensor processing, data conditioning, mounting methods etc.
CO-2	To design communication technologies on the basis of data transfer rate, power/energy requirements and throughput requirements.
CO-3	To implement the key enablers of industrial IoT systems such as AR, VR, cloud computing, application softwares in the field of industrial IoT
CO-4	To design predictive maintenance strategy for the critical processes of the industry by using IoT concept to reduce the production loss of the industry.
CO-5	To apply the IoT concepts in building solutions to industrial problems.

BTME804T	Elective – VI: Additive Manufacturing (Theory)
CO-1	Explain the evolution of additive manufacturing (AM) and its importance in digital manufacturing. Also, create AM process chain for product.
CO-2	Create and pre-process a model for additive manufacturing.
CO-3	Explain liquid based and solid based additive manufacturing processes
CO-4	Explain powder based additive manufacturing process
CO-5	Post process the additive manufactured parts.

BTME804T	Elective – VI: Energy Conservation & Management (Theory)
CO-1	Identify and classify areas of energy conservation in industries.
CO-2	Know the duties and responsibilities of an energy manager and energy auditor.
CO-3	Analyze and modify existing working of the energy utilizing and generating machines.
CO-4	Know how to use instruments in energy audit process.
CO-5	Implement proper energy saving techniques in boiler, furnaces etc.

BTME804T	Elective – VI: Green & Sustainable Manufacturing (Theory)
CO-1	Get acquainted with the current global and Indian manufacturing scenario and challenges with respect to environment.
CO-2	Get acquainted with the green manufacturing concept and its need in global and Indian context.
CO-3	Get conversant with the various Key GM Operational Technologies, approaches, strategies, and Elements.
CO-4	Get acquainted with International and National Green regulations,. International Treaties supporting GM.
CO-5	Get conversant with the Conceptual GM model. Performance measurement tools & Green economics for GM, Analytical Tools for Sustainability Assessment, Life Cycle Assessment.

BTME805P	Project Phase II
CO-1	Convert their conceptual ideas into working projects .
CO-2	Explore the possibility of publishing papers in journal.
CO-3	Enhance their knowledge through an on-line collection of evidence, work and other information.
CO-4	Ultimately promotes for inter-personal communication, punctuality, demonstration of appropriate written and oral communication skills with overall Work-Integrated- Learning.
CO-5	Develop an understanding of social, cultural, professional, ethical, global and environmental responsibilities of the professional Engineer.

H.O.D.



H.O.D.

**Department of Mechanical Engineering
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Madhukarrao Pandav College Of Engineering Bhilewada, Bhandara

Course Outcome

Department of ELECTRONICS AND TELECOMMUNICATION ENGINEERING

3rd semester B.TECH

Subject	MATHEMATICS -III(Theory)
code	BEETC-301T
Sr No.	Course Outcome
1	Apply Laplace Transform to solve ordinary differential equations ,Integral equation and Integra-differential Equation
2	Apply Fourier series in the analysis of periodic functions in terms sine and cosine encountered in engineering problems and Fourier Transform to solve integral equation
3	Learn the concept of differentiating , integrating and expanding of analytic functions in complex numbers and their applications such as evaluation of integrals of complex fuction
4	Solve partial differential equations of first order , higher order with constant coefficients and of second order using method of separation of variable
5	Analyze real world scenarios to recognize when matrices are appropriate , formulate problems about the scenarios , creatively model these scenarios in order to solve the problems using multiple approaches.

6	Understand the impact of scientific and engineering solutions in a global and societal context
7	Create the groundwork for post-graduate courses, specialized study, and reasearch in mathematics

Subject	COMPONENTS FOR ELECTRONIC DEVICE (Thoery)
code	BEETC-302T
Sr No.	Course Outcome
1	Understand the principles of semiconductor physics
2	Understand the principles of semiconductor diode
3	Understand and analyze the mathematical model of transistors.
4	Understand and analyze the mathematical model of unipolar transistors

5	Understand the process of Integrated Circuit Fabrication.
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Subject	COMPONENTS FOR ELECTRONIC DEVICE(Practical)
code	BEETC-302(P)
Sr No.	Course Outcome
1	Explain the basic concepts of different semiconductor components.
2	Understand the use of semiconductor devices in different electronic circuits.
3	Calculate different performance parameters of transistors
4	Plot and study the characteristics of semiconductor devices

Subject	DIGITAL SYSTEM DESIGN (Theory)
code	BEETC-303T
Sr No.	Course Outcome
1	Demonstrate the knowledge of: Logic gates, Boolean algebra including algebraic manipulation/simplification and Application of DeMorgan's Theorem, Karnaugh map reduction method.
2	Construct basic combinational circuits and verify their functionalities
3	Illustrate and apply the knowledge of different flip flops to build sequential digital circuits.
4	Apply the fundamental knowledge about digital electronics so as to construct and analyze digital circuits like counters and sequence generators.
5	Demonstrate and apply programming proficiency using the various addressive modes and instructions of the target microprocessor

Subject	DIGITAL SYSTEM DESIGN (Practical)
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code	BEETC-303P
Sr No.	Course Outcome
1	Demonstrate the different Boolean Laws & basics of K-map to realize combinational & sequential circuits
2	Identify the various digital ICs & understand their operation
3	Describe the operation & timing constraints for latches, registers, different sequential circuits
4	Solve basic binary math operations using microprocessor & explain the internal architecture & its operation within the area of manufacturing & performance.
5	Select programming strategies & proper mnemonics & run their program on the training board

Subject	NETWORK THEORY (Theory)
code	BEETC-304T

Sr No.	Course Outcome
1	Apply mesh and node voltage method to model and analyze electrical circuits.
2	Apply network theorems for the analysis of networks.
3	Obtain the transient and steady-state response of electrical circuits.
4	Synthesize waveforms and apply Laplace transforms to analyze networks.
5	Evaluate different Network Functions and Analyze two port network behavior

Subject	SIGNALS AND SYSTEM (Theory)
code	BEETC-305T
Sr No.	Course Outcome

1	Classify different types of signals and systems
2	Illustrate the concept of Linear Time Invariant (LTI) system and its properties.
3	Analyze continuous time periodic and aperiodic signals.
4	Analyze continuous time systems using Laplace Transform.
5	Analyze DT signals and systems in frequency domain using Fourier Transform

Subject	MEASUREMENTS AND INSTRUMENTATION(Theory)
code	BEETC-306T
Sr No.	Course Outcome
1	Select and use precise/accurate instrument for measurement of various electrical parameters and to understand its technical specifications

2	Identify and minimize errors in electrical/electronic measurement.
3	Understand analog and digital measurement.
4	Measure power and frequency with the help of function generators and different analyzers.
5	Understand modern trends in telemetry systems

Subject	ELECTRONICS WORKSHOP-I (Practical)
code	BEETC307(P)
Sr No.	Course Outcome
1	Explain the Basic Concepts of Different Semiconductor Components with Their Usage Physically As per their types
2	Use Semiconductor Devices in Different Electronic Circuits and Projects.

3	Calculate Different Performance Parameters of Active and Passive Devices and their Datasheet
4	Plot and Study the Characteristics of Semiconductor Devices.

Madhukarrao Pandav College Of Engineering Bhilewada, Bhandara
Course Outcome
Department of ELECTRONICS AND TELECOMMUNICATION ENGINEERING
4th semester B.TECH

Subject	MICRONCONTROLLER AND APPLICATION (T)
code	BEETC-401T
Sr No.	Course Outcome
1	Demonstrate the programming model of various microcontrollers.
2	Design and implement 8051 microcontroller-based systems for various applications
3	Illustrate & program AVR / RISC microcontrollers in Integrated Development environment

4	Design and implement advanced processor/controllers-based systems for various applications
5	Design and develop Arduino based embedded system applications.

Subject	MICROCONTROLLER AND APPLICATION (p)
code	BEETC-401P
Sr No.	Course Outcome
1	Demonstrate the concept of Assembly languages and higher level language programming
2	Interface various peripherals with 8051,Atmega 32, MSP 430 and Arduino.
3	Simulate the programs on different software platforms.

Subject	ANALOG AND DIGITAL COMMUNICATION(T)
code	BEETC-402T
Sr No.	Course Outcome
1	Demonstrate a basic need of modulation and various types of amplitude and angle modulation techniques required for analog communication
2	Analyze various AM-FM receivers, along with the effect of noise on analog communication systems.
3	Explain the designing of digital communication systems by applying knowledge of the various pulse modulation techniques
4	Describe various digital modulation techniques and various parameters associated withit.
5	Identify different types of channel coding techniques and analyze the different spread spectrum methods

Subject	ANALOG AND DIGITAL COMMUNICATION (P)
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code	BEETC-430P
Sr No.	Course Outcome
1	Explain the practical aspects of linear and non-linear applications of OP-AMP
2	Design the various wave-shaping circuits, oscillators, signal conditioners and various application based circuits using OP-AMP and transistor
3	Demonstrate various concepts of analog communication
4	Explain various concepts of digital communication.
5	Develop an application based project using industry based OPAMP

Subject	ANALOG SYSTEM DESIGN
code	BEETC-404T

Sr No.	Course Outcome
1	Describe and explain the basic concepts of OPAMP.
2	Demonstrate and analyze various linear applications of OPAMP
3	Demonstrate and analyze various non-linear applications of OPAMP
4	Examine and design DC Power Supply.
5	Examine and design various types of oscillators and filters.

Subject	DATA STRUCTURE AND ALGORITHMS
code	BEETC-405T
Sr No.	Course Outcome

1	Student will be able to choose appropriate data structure based on the specified problem definition and analysis the algorithm
2	Student will be able to handle operations like searching, insertion, deletion, traversing mechanism etc. on various data structures
3	Students will be able to apply concepts learned in various domains like Operating System,DBMS etc
4	Students will be able to use linear and non-linear data structures like stacks, queues, linked list,trees,etc

Subject	NUMERICAL MATHEMATICS AND PROBABILITY USING MATLAB
code	BEETC-406T
Sr No.	Course Outcome
1	Learn and use MATLAB effectively in various applications as a simulation tool.
2	Find an approximate solution of algebraic and transcendental equations, system of linear equations and first order ordinary differential equations by various numerical methods and MATLAB commands.

3	Apply Z- transform to solve difference equations with constant coefficients.
4	Analyze real world scenarios to recognize when probability is appropriate, formulate problems about the scenarios; creatively model these in order to solve the problems using multiple approaches
5	Understand the impact of scientific and engineering solutions in a global and societal context
6	. Create the groundwork for post-graduate courses, specialized study, and research in mathematics.

Subject	PROGRAMMING FOR PROBLEM SOLVING (T)
code	BEETC-407T
Sr No.	Course Outcome
1	Student will be able to understand the basic concepts of Object Oriented Programming and design simple java programs.
2	. Student will be able to apply the knowledge of Inheritance in program development.

3	Student will able to develop programs using polymorphism and interfaces.
4	Student will be able to handle various exceptions using concepts of exception handling.
5	Student will able to use multithreading concepts to develop inter process communication.
6	Student will be able to understand and implement concepts on file streams and operations in java programming for a given application programs.

Subject	PROGRAMMING FOR PROBLEM SOLVING (P)
code	BEETC-407P
Sr No.	Course Outcome
1	Able to choose appropriate data structure based on the specified problem definition and analysis the algorithm.
2	Able to handle operations like searching, insertion, deletion and traversing mechanism etc. on various data structures.

3	. Apply the knowledge of Inheritance in program development.
4	. Develop programs using polymorphism and interfaces.
5	Handle various exceptions using concepts of exception handling.

Madhukarrao Pandav College Of Engineering Bhilewada, Bhandara

Course Outcome

Department of ELECTRONICS AND TELECOMMUNICATION ENGINEERING

5th semester B.TECH

Subject	Embedded System Design (T)
code	BEETC-501T
Sr No.	Course Outcome
1	To Describe and analyse the Requirements & Design issues of embedded systems design.
2	To apply the knowledge of architecture and Programming of for development of simple applications.

3	To Describe and Demonstrate the interfacing of various peripherals with ARM Processor.
4	To explain the concept of Real Time Operating System for embedded system design.

Subject	Embedded System Design Lab (P)
code	BEETC-501P
Sr No.	Course Outcome
1	Apply the knowledge of Instruction skill for the Development of Simple and Complex Programs.
2	Apply the programming skill for the Development of Simple application.
3	Apply and Demonstrate the Concept of Interfacing for the Development of Embedded System.

Subject	Electromagnetic Waves
code	BEETC-502T
Sr No.	Course Outcome
1	Understand the different coordinate system & analyze theorem's of electric Field.
2	Understand magnetic fields, Apply the Maxwell's equations to solve problems in electromagnetic field theory.
3	Analyze the propagation of wave in different transmission media.
4	Understand and analyze various parameters and characteristics of the rectangular waveguide.
5	Understand principle of radiation and radiation characteristics of an antenna.

Subject	Digital Signal Processing(T)
code	BEETC-503T
Sr No.	Course Outcome
1	Analyze discrete time signals and system.
2	Process the signal in z domain for various discrete time systems.
3	Draw the structures of various discrete time systems in DFI, DFII, cascade and parallel form
4	Apply discrete Fourier transform, its properties & Analyze the discrete time systems in frequency domain.
5	Understand the filter design techniques for IIR and FIR digital filters and will be able to determine parameters affecting its response.

Subject	Digital Signal Processing Lab(P)
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code	BEETC-503P
Sr No.	Course Outcome
1	Demonstrate the sampling and reconstruction of discrete time signal & perform different signal operation in developing discrete time system.
2	Analyze different properties of Z-transform
3	Analyze different properties of discrete Time Fourier transform
4	Analyze and process the signals in the discrete domain.
5	Design the filters to suit requirements of specific applications.
6	Apply the techniques, skills, and modern engineering tools like MATLAB

Subject	INDUSTRIAL ECONOMICS AND ENTREPRENEURSHIP DEVELOPMENT.
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code	BEECE-505T
Sr No.	Course Outcome
1	Understand different types of business structure.
2	Acquire the knowledge of different market structures and New economic policy
3	Grasp the functions of banks, taxations system and implications of Inflation.
4	Identify various sources of finance
5	Analyse the problems of Small Scall Industries and government's policies for them.

Subject	Operating system (Elective)
code	BEETC-505PE

Sr No.	Course Outcome
1	Explain basic concepts of operating system
2	Understand the process management policies and scheduling algorithms
3	Design various memory management techniques
4	Analyze process synchronization techniques.
5	Evaluate deadlock detection and prevention mechanism

Subject	Sensors and Systems (Elective)
code	BEETC-505PE
Sr No.	Course Outcome

1	Explain fundamental physical and technical base of sensors and actuators.
2	Describe basic laws and phenomena that define behavior of sensors and actuators
3	Analyze various approaches, procedures and results related to sensors and actuators.
4	Create analytical design and development solutions for sensors and actuators
5	Interpret the acquired data and measured results.

Subject	Information Theory and Error Correcting Codes(Elective)
code	BEETC-505PE
Sr No.	Course Outcome
1	Interpret and summarize the role of information theory and linear algebra in source coding and channel coding

2	Make use of various error control encoding and decoding techniques
3	Implement various error control techniques
4	Analyze the performance of error control codes

Madhukarrao Pandav College Of Engineering Bhilewada, Bhandara

Course Outcome

Department of ELECTRONICS AND TELECOMMUNICATION ENGINEERING

6th Semester B.TECH

Subject	Computer Communication Networks (T)
code	BEETC-601T
Sr No.	Course Outcome
1	Describe the basics of Computer Network, Data Communication, Network topologies, transmission media and switching techniques.
2	Analyze the services and features of various protocols of Data Link Layer and MAC sub-layer.

3	Apply the concept of IP Addressing techniques and its various protocols of Network Layer
4	Describe the transport layer, Application Layer services and its protocol Headers and analyze the congestion control protocols.
5	Explain the function of Application Layer and Presentation layer paradigm and protocols.

Subject	Computer Communication Networks lab (P)
code	BEETC-601P
Sr No.	Course Outcome
1	To analyze and select various cables and Connectors used for networking with computer network security.
2	To verify the implementation results on software like NS2 and simulate different networking models and implement different networking protocols.
3	To understand different data transmission techniques using TCP and UDP Protocol for evaluating the different IP addresses for various systems

Subject	Internet of Things (T)
code	BEETC-602T
Sr No.	Course Outcome
1	Analyze different design levels of IoT
2	Analyse IOT Architecture
3	Understand network and communication aspects
4	Design a portable IoT using Rasperry Pi and Aurdino
5	Analyze applications of IoT in real time scenario

Subject	Internet of Things Lab(P)
code	BEETC-602P
Sr No.	Course Outcome
1	To analyze and select various sensing , actuation , Physical design of IoT
2	To verify the implementation results on software Wireless medium access issues, MAC protocol, Survey routing protocols,
3	To understand different data transmission techniques data to node MCU.

Subject	Wireless Sensor Networks
code	BEETC-603T
Sr No.	Course Outcome

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.
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
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.

Subject	Wireless Sensor Networks Laboratory (P)
code	BEETC-603P
Sr No.	Course Outcome
1	To analyze the networking principles and protocols of engineering principles and their knowledge
2	To verify the wireless sensors networking with the knowledge of computing science
3	To understand the knowledge of associated business

Subject	Computer Architecture (Elective-II)
code	BEEETC-604PE
Sr No.	Course Outcome
1	Demonstrate computer architecture concepts related to design of modern processors, memories and I/Os
2	To develop logic for assembly language programming using arithmetic and logical operations.
3	Distinguish the organization of various parts of a system memory hierarchy
4	Describe fundamentals concepts of pipeline and vector processing.
5	Analyze the performance of commercially available computers

Subject	Data Base Management System(Elective-II)
code	BEETC-605PE
Sr No.	Course Outcome
1	Understands basic database concepts and data modeling techniques used in data base design
2	Study the concept of functional dependency and perform the calculus with design database by using different normalization techniques
3	Study query processing and perform optimization on query processing
4	Understand the concept of transaction processing and different recovery techniques used in RDBMS
5	Study and Implement advanced database which are used in real time system

Subject	Control System Engineering (Elective-II)
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code	BEETC-606PE
Sr No.	Course Outcome
1	Understand the basic linear feedback principles and find out the transfer function using various methods
2	Sketch the root locus and determine the location of the closed loop poles
3	Analysis of Time response
4	Understand the different types of controller
5	Analysis of State space model

Subject	Antenna and Wave Propagation (Elective-II)
code	BEETC-607PE

Sr No.	Course Outcome
1	Describe transmission line characteristics
2	Calculate antenna parameters (radiation pattern, beam width, lobes, directivity, gain, impedance, efficiency, polarization)
3	Analyze wire antennas (monopoles, dipoles, and loops)
4	Analyze and design antenna arrays.
5	Analyze and design Microstrip antennas

Subject	Consumer Electronics (Open Elective-I)
code	BEETC6050E
Sr No.	Course Outcome

1	Describe various video gadgets used in domestic and commercial applications
2	Describe various video gadgets used in domestic and commercial applications
3	Explain satellite communication technology along with DTH for day to day application
4	Describe various types of home appliances used in domestic life like washing machine, oven RO plant, Mixer, grinder, vaccume cleaner etc
5	Understand various types of home appliances used in domestic life like printers, food processors, Induction devices, scanner and fax machines etc.

Subject	Effective technical Communication (Theory)
code	BEETC606T
Sr No.	Course Outcome
1	acquire knowledge of structure of language

2	Build vocabulary and face interview process and can become employable.
3	develop business writing skills
4	Understand technical and scientific writing skills

Madhukarrao Pandav College Of Engineering Bhilewada, Bhandara

Course Outcome

Department of ELECTRONICS AND TELECOMMUNICATION ENGINEERING

7th Semester B. Tech

Subject	PEC-III Wireless & Mobile Communication
code	BEETC701PE-T
Sr No.	Course Outcome
1	Design a model of Cellular Communication System and analyze their operation and performance.

2	Quantify the causes and effects of path loss and signal fading on received signal Characteristics and design systems to reduce the effects of same.
3	To construct and analyze the GSM system, use the IRS technology to increase the range and quality of GSM signal.

Subject	MICROWAVE & RADAR ENGINEERING
code	BEETC702PE-T
Sr No.	Course Outcome
1	Understand the use of active and passive microwave devices
2	Analyze scattering matrix, Different UHF components with the help of scattering parameter.
3	Understand the use of different Klystrons.
4	Analyze the different power distribution Tees.

5	Acquisition of technical competence in specialized areas of Radar engineering,
6	Identify, formulate and model problems and find Radar engineering solutions based on a system approach.

Subject	Optical Communication
code	BTCVE503PE
Sr No.	Course Outcome
1	Learn the basic elements and behavior of optical fiber.
2	Analyze the different kinds of losses, signal distortion in optical wave
3	Classify various optical source materials, LED structures, LASER diodes.
4	Explore the fiber optic receivers such as PIN, APD diodes, receiver operation & performance.

5	Understand the operational principle of WDM, SONET, and Optical Amplifiers
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Subject	OE-II Bioengineering
code	BEETC7040E
Sr No.	Course Outcome
1	Analyze the biomedical signals.
2	Describe x-ray, MRI, CT, VR technologies and infra-red imaging.
3	Explain Biomedical sensors & understand the measurements.
4	Describe different medical instruments & their applications
5	Understand hospital information system & relevant training & simulation technologies.

Subject	Intellectual Property Rights
code	BEETC706A
Sr No.	Course Outcome
1	Read about the concepts of Intellectual Property Rights
2	Distinguish and understand the world of Intellectual Property.
3	Explain why it needs to be protected? How is it protected?
4	Analyze discuss and debate about the latest legal problems confronting the world and the solutions being offered.
5	Consider new and upcoming areas of Intellectual Property (IP) like Biotechnology, Domain
6	Names, Creative Commons etc.

Madhukarrao Pandav College Of Engineering Bhilewada, Bhandara

Course Outcome

Department of ELECTRONICS AND TELECOMMUNICATION ENGINEERING

8th Semester B. Tech

Subject	PEC-VI CMOS VLSI Design
code	BEETC801PE
Sr No.	Course Outcome
1	Describe and interpret the basic concepts of MOS transistors,
2	.Construct the ability to design a system, component or process as per needs and specifications.
3	Analyze inverter design, characteristics and applications and performance parameters of CMOS Circuits.
4	Evaluate circuits using different CMOS styles and measure performance of the complex logic structures

Subject	PEC-VII Satellite Communication
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code	BEETC802PE
Sr No.	Course Outcome
1	Do research with capabilities in the design, development and manufacture of satellite communication systems used in a wide spectrum of applications.
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
3	Able for Acquisition of technical competence in specialized areas of Satellite Communication
4	Able to identify, formulate and model problems and find Satellite Communication engineering solutions based on a system approach.

Subject	Project phase 2
code	BEETC-803P
Sr No.	Course Outcome

1	Analyze or Design the Electronics /telecommunication /allied Engineering problems by using appreciate methodology in a team work..
2	Interpret the communication skills of team members and
3	Use of Modern tools in the field of Electronics Engineering

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Madhukarrao Pandav College Of Engineering Bhilewada, Bhandara

Department of Computer Engineering

3rd Semester

Course Outcome

Subject:	MATHEMATICS-III(Theory)
Code:	BECME301T
Sr.No.	Course Outcome
BECME301T.1	Solve mathematical model with Laplace Transform and error functions and their applications.
BECME301T.2	Make use of Fourier transforms and Z - transforms to analyze wave forms of periodic functions & non periodic functions
BECME301T.3	Solve problems in engineering domain related to Linear Algebra using matrices.
BECME301T.4	Develop problem solving techniques needed to accurately calculate probabilities and describe the properties of discrete and continuous distribution functions.
BECME301T.5	Compute correlations; Apply the tests of goodness of fit.

Subject:	DIGITAL CIRCUITS AND FUNDAMENTALS OF MICROPROCESSOR(Theory)
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Code:	BECME302T
Sr.No.	Course Outcome
BECME302T.1	Understand the concepts of realization of Boolean functions using various combinational logic design
BECME302T.2	Analyze & design digital combinational logic circuits
BECME302T.3	Illustrate memory elements & design used in sequential logic design
BECME302T.4	Classify diHerent logic families, memory devices and PLDs
BECME302T.5	Describe the internal working of 8085 microprocessor and AL programming concepts in 8085 microprocessor with examples

Subject:	OBJECT ORIENTED PROGRAMMING(Theory)
Code:	BECME303T
Sr.No.	Course Outcome
BECME303T.1	Realize the difference between the top-down and bottom-up approach along with thinking in terms of objects.

BECME303T.2	Explain programming fundamentals, including statement and control flow and recursion.
BECME303T.3	Analyze the given problem keeping in mind object oriented approach
BECME303T.4	Apply the object-oriented concepts defining the development of solution
BECME303T.5	Illustrate the use of static and run time binding, error handling mechanism

Subject:	THEORY OF COMPUTATION(Theory)
Code:	BECME304T
Sr.No.	Course Outcome
BECME304T.1	Explain fundamental properties of formal languages and formal grammars, deterministic and nondeterministic finite automata and types of languages and types of finite automata.
BECME304T.2	Compare deterministic and nondeterministic finite automata and deterministic finite automata and Explain fundamental construction of Mealy and Moore Machine.
BECME304T.3	Prove the equivalence of languages described by finite state machines and regular expressions and able to construct regular grammar from finite automata and vice versa.
BECME304T.4	Apply logic using context-free languages, context-free grammars.

BECME304T.5	Construct push-down automate, Turing machines and identify decidability and recursive enumerability.
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Subject:	INTRODUCTION TO COMPUTER NETWORKS(Theory)
Code:	BECME305T
Sr.No.	Course Outcome
BECME305T.1	Describe the basics of network and its hardware components
BECME305T.2	Explain the different network models
BECME305T.3	Interpret the various functions and protocols of network models.
BECME305T.4	Distinguish different transmission media with its connectors.
BECME305T.5	Summarize the concepts of network security and privacy.

Subject:	UNIVERSAL HUMAN VALUES(Theory)
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Code:	BECME306T
Sr.No.	Course Outcome
BECME306T.1	Expected to become more aware of themselves, and their surroundings (family, society, nature)
BECME306T.2	Become more responsible in life, and in handling problems with sustainable solutions, while keeping human relationships and human nature in mind.
BECME306T.3	Handle better critical ability.
BECME306T.4	Become sensitive to their commitment towards what they have understood (human values, human relationship and human society).

Subject:	DIGITAL CIRCUITS AND FUNDAMENTALS OF MICROPROCESSOR (Practical)
Code:	BECME302P
Sr.No.	Course Outcome
BECME302P.1	Apply the basic concept of logic gates and their use in combinational and sequential circuits.
BECME302P.2	Use and implements Universal logic gates.

BECME302P.3	Design and Implement basic circuits required in computer system.
BECME302P.4	Develop and execute assembly language programs.

Subject	OBJECT ORIENTED PROGRAMMING (Practical)
code	BECME303P
Sr No.	Course Outcome
BECME303P.1	Define basic terms necessary for modeling computer systems.
BECME303P.2	Collect requirements and prepare their scenarios.
BECME303P.3	Prepare diagrams by UML.
BECME303P.4	Prepare and use of design patterns.
BECME303P.5	Prepare supporting documentation.

Subject	COMPUTER WORKSHOP-I (Practical)
code	BECME309P
Sr No.	Course Outcome
BECME309P.1	Understand the concept of File handling in C
BECME309P.2	To develop web application using PHP language.
BECME309P.3	To Understand the basic variable, string and Numbers of python.
BECME309P.4	To Understand the concept of python language like if stement and while loop.

Subject	ENVIRONMENTAL SCIENCE(Theory)
code	BECME310T
Sr No.	Course Outcome
BECME310T.1	Identify different types of air pollutions as well as explain their causes, detrimental effects on environment and effective control measures.

BECME310T.2	Recognize various sources of water pollutants and interpret their causes and design its effective control measure.
BECME310T.3	Illustrate various types of pollutants and waste management.
BECME310T.4	Analyze various social issues related to environment and challenges in implementation of environmental laws.

4th Semester

Course Outcome

Subject:	DESCRETEMATHEMATICS AND GRAPH THEORY(Theory)
Code:	BECME401T
Sr.No.	Course Outcome
BECME401T.1	Apply graph theory models of data Structures and State machines to Solve problems of connectivity and constraint satisfaction.
BECME401T.2	How mathematical models for engineering are designed, analyzed and implemented in industry and organizations.
BECME401T.3	Mathematically identify basic data types and structures (such as numbers, sets, graphs, and trees) used in computer algorithms and systems; distinguish rigorous definitions and conclusions from merely plausible ones.
BECME401T.4	Analyze real world scenarios to recognize when Logic, sets, functions are appropriate, formulate problems about the scenarios, creatively model these scenarios (using technology, if appropriate) in order to solve the problems using multiple approaches.

BECME401T.5	Apply knowledge of mathematics, physics and modern computing tools to scientific and engineering problems and in life-long learning.
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Subject:	WEB TECHNOLOGY(Theory)
Code:	BECME402T
Sr.No.	Course Outcome
BECME402T.1	Design web page using HTML tag, HTML forms, frame & frame sets
BECME402T.2	Describe and create the web page layout using CSS
BECME402T.3	Distinguish in HTML and XML & design dynamic websites
BECME402T.4	Summarize validation, Control and Graphics
BECME402T.5	Apply the concept for deployment of websites and its security issues.

Subject:	OPERATING SYSTEM(Theory)
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Code:	BECME403T
Sr.No.	Course Outcome
BECME403T.1	Describe the concept of operating system and file system
BECME403T.2	Explain process management and evaluate process scheduling algorithms.
BECME403T.3	Describe process synchronization and apply the knowledge to solve problem
BECME403T.4	Describe and compare methods for handling deadlocks and secondary Storage Structure
BECME403T.5	Describe and solve the problems of memory management along with security

Subject:	DATA STRUCTURE(Theory)
Code:	BECME404T
Sr.No.	Course Outcome
BECME404T.1	Understand the basic concept of data structures and time complexity.

BECME404T.2	Solve the problems and demonstrate using searching and sorting algorithm using programming language
BECME404T.3	For given problem of stack and queues implement it and analyze the same to determine the time and computation complexity.
BECME404T.4	Classify & demonstrate the use of different data structures like linked list, trees & graphs along with related algorithms.
BECME404T.5	Infer the use of symbol tables for hushing and collision resolution.

Subject:	COMPUTER ARCHITECHTURE AND ORGANIZATIO(Theory)
Code:	BECME405T
Sr.No.	Course Outcome
BECME405T.1	Understand computer system and its fundamental architecture.
BECME405T.2	Solve various computer arithmetic problems.
BECME405T.3	Understand functionalities and organization of processor and measures to improve its performance.
BECME405T.4	Understand I/O device interfacing and computer memory hierarchy.

BECME405T.5	Understand various methods in parallel organization of processor
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Subject:	SYSTEM PROGRAMMING(Theory)
Code:	BECME406T
Sr.No.	Course Outcome
BECME406T.1	Distinguish among different system programs and how assembler works. Tell the implementation of two pass assembler.
BECME406T.2	Relate among different features of Macro's and to simplify the process of macro implementation.
BECME406T.3	Demonstrate the working of loader and to compare and contrast among different loading schemes.
BECME406T.4	Demonstrate the working of compiler by categorizing it into different phases.
BECME406T.5	To demonstrate driver installation routines and to compare device drivers for different operating systems.

Subject:	CONSUMER AFFAIRS(Theory)
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Code:	BECME410T
Sr.No.	Course Outcome
BECME410T.1	Understand the basic concept and importance of Consumer Education
BECME410T.2	Graph the concepts related to Consumer Education and Protection
BECME410T.3	Identify the regular and redressal mechanism system
BECME410T.4	Aware of consumer movements

Subject	WEB TECHNOLOGY (Practical)
code	BECME402P
Sr No.	Course Outcome
BECME402P.1	To develop simple web page using HTML tag, HTML forms, frame & frame sets
BECME402P.2	Implement the web page layout using CSS.

BECME402P.3	Analyze a web page and identify its elements and attributes.
BECME402P.4	Develop interactive web applications using HTML forms and servlets.

Subject	OPERATING SYSTEM(PRACTICAL)
code	BECME403P
Sr No.	Course Outcome
BECME403P.1	Ability to implement inter process communication between two processes.
BECME403P.2	Ability to simulate and implement operating system concepts such as scheduling, Deadlock management, file management, and memory management.
BECME403P.3	Ability to design and solve synchronization problems.

Subject	DATA STRUCTURE(PRACTICAL)
code	BECME404P

Sr No.	Course Outcome
BECME404P.1	To develop simple programs using various data structures.
BECME404P.2	Implement various basic data structures and its operations.
BECME404P.3	Implement various searching and sorting algorithms.
BECME404P.4	Implement various tree operations.
BECME404P.5	Implement various graphs algorithms.

5th Semester

Course Outcome

Subject	DATABASE MANAGEMENT SYSTEM(Theory)
code	BTEHCME501T
Sr No.	Course Outcome
BTEHCME501T.1	Explain the architecture and functioning of management system as well as associated tools and techques . Compare file processing system of DBMS
BTEHCME501T.2	Illustrate database query and manipulation languages such as SQL (Structure query language) and Interpret real problem with SQL query
BTEHCME501T.3	Classify various data models and construct Entity. Relationship diagram Apply normalization from to convert database tables into normal forms.

BTECHCME501T.4	Query Processing and Query Optimization Measure of query cost for various Operators
BTECHCME501T.5	Transaction Management Explain role of various components in the transaction management
BTECHCME501T.6	Understand the concept of Concurrency Control System

Subject	DATABASE MANAGEMENT SYSTEM(PRACTICAL)
code	BTCME501P
Sr No.	Course Outcome
BTCME501P.1	Acquire knowledge of handling large volume of data.
BTCME501P.2	Acquire skills to deal with Real life database implementation.
BTCME501P.3	Response off faster queries and serve as many users as possible concurrently.
BTCME501P.4	Fit with any Database project in industry after completion of degree.

Subject	COMPUTER GRAPHICS(Theory)
code	BTCME502T
Sr No.	Course Outcome
BTCME502T.1	Understand the basics of computer graphics, and different graphics systems. Apply and compare the algorithms for drawing 2D images also explain aliasing & anti-aliasing
BTCME502T.2	Apply and compare the Polygon Filling algorithms.
BTCME502T.3	Solve the problems on viewing transformations. Analyze and Apply clipping algorithms.
BTCME502T.4	Analyze and apply transformation on 2D & Explain the projection 3D Graphics.
BTCME502T.5	Explain the hidden surface removal, Curves & surface rendering algorithms.

Subject	COMPUTER GRAPHICS (Practical)
code	BTCME502P
Sr No.	Course Outcome

BTCME502P.1	Explain the working of Input and Output devices for graphics.
BTCME502P.2	Explain about graphics primitives and work with coordinate spaces, co-ordinate conversion, and transformations of graphics objects.
BTCME502P.3	Demonstrate 2D & 3D geometrical transformations using modern tools.
BTCME502P.4	Explain various 3D projections and current models for surfaces
BTCME502P.5	Make use of the color and transformation techniques for various applications.

Subject	JAVA PROGRAMMING(Theory)
code	BTCME503T
Sr No.	Course Outcome
BTCME503T.1	Analyze the necessity for Object Oriented Programming paradigm over structured programming and become familiar with the fundamental concepts in OOP like encapsulation, Inheritance and Polymorphism.
BTCME503T.2	Design and develop java programs, analyze, and interpret object oriented data and report results.
BTCME503T.3	Design an object oriented system, AWT components and multithreaded processes as per needs and specifications.

BTCME503T.4	It help to succeed in competitive examinations like GATE, Engineering services, Technical interviews etc.
BTCME503T.5	Plan their career in java based technologies like HADOOP etc.

Subject	JAVA PROGRAMMING (Practical)
code	BTCME503P
Sr No.	Course Outcome
BTCME503P.1	Understand the basic data types and control flow constructs using J2SE.
BTCME503P.2	Make use of various Object Oriented Concepts like inheritance, data hiding, Exception Handling etc., to implement various programs in Java.
BTCME503P.3	Understand the concepts of Multi threading & Multi programming.
BTCME503P.4	Implementation of String class, Date class, Time class and Calendar class in various micro projects.
BTCME503P.5	Understand the concepts of Collections Framework.

Subject	ELECTIVE-I : SOFTWARE ENGINEERING(Theory)
code	BTCME504.3T
Sr No.	Course Outcome
BTCME504.3T.1	To compare & select the process model for a business system.
BTCME504.3T.2	To identify an specify the requirements for the development of an application.
BTCME504.3T.3	To develop and maintain efficient, reliable and cost effective software solutions.
BTCME504.3T.4	To critically think and evaluate assumptions and arguments of the client.
BTCME504.3T.5	To understand the different software testing.
BTCME504.3T.6	To understand the risk management and quality of software.

Subject	EFFECTIVE TECHNICAL COMMUNICATION(Theory)
code	BTCME505T

Sr No.	Course Outcome
BTCME505T.1	Acquire knowledge of structure of language.
BTCME505T.2	Be able to face competitive exams and the interview process and can become employable.
BTCME505T.3	Develop business written skills.
BTCME505T.4	Become familiar with technology enabled communication and develop technical and scientific writing skills.

6th Semester

Course Outcome

Subject	DESIGN AND ANALYSIS OF ALGORITHMS(Theory)
code	BTCNE601T
Sr No.	Course Outcome
BTCME601T.1	To design and analyse the time and space complexity for any algorithm.
BTCME601T.2	Apply the design techniques of algorithm in solving real life problems.
BTCME601T.3	apply the design techniques of algorithm using dynamic programming in solving real life problems.
BTCME601T.4	Perform amortize analysis for any algorithm

BTCME601T.5	Understand NP class of problems and propose approximation algorithms for the same
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Subject	DESIGN AND ANALYSIS OF ALGORITHMS(Practical)
code	BTCME601P
Sr No.	Course Outcome
BTCME601P.1	Identify the problem given and design the algorithm using various algorithm design techniques.
BTCME601P.2	Analyze the performance of various algorithms.
BTCME601P.3	Implement various algorithms in a high level language.
BTCME601P.4	Compare the performance of different algorithms for same problem

Subject	TCP/IP(Theory)
code	BTCME602T

Sr No.	Course Outcome
BTCME602T.1	Understand the basics concepts of internetworking.
BTCME602T.2	Comprehend the various address resolution protocols.
BTCME602T.3	Use and adapt the IP layer protocols.
BTCME602T.4	Understand the concept of transmission control protocol.
BTCME602T.5	Apply the security to the IP layer.

Subject	TCP/IP(Practical)
code	BTCME602P
Sr No.	Course Outcome
BTCME602P.1	Develop knowledge to implement client server applications.
BTCME602P.2	Develop skills in UNIX socket programming.

BTCME602P.3	Develop skills to use simulation tools.
BTCME602P.4	Analyze the performance of network protocols
BTCME602P.5	Analyze the network traffic.

Subject	ELECTIVE-II: HUMAN COMPUTER INTEREACTION(Theory)
code	BTCME603.1T(i)
Sr No.	Course Outcome
BTCME603.1T.1	Describe the capabilities of both humans and computers
BTCME603.1T.2	Design effective dialog for HCI
BTCME603.1T.3	Identify the stake holder's requirements and choose the appropriate models
BTCME603.1T.4	Develop mobile HCI using mobile elements and tools
BTCME603.1T.5	Design Web interfaces using different techniques.

Subject	ELECTIVE-III: DATA WAREHOUSING AND MINING (Theory)
code	BTCME604.3T(iii)
Sr No.	Course Outcome
BTCME604.3.1	Understand the need, definition, applications, components, processes & Architecture of a Data Warehouse.
BTCME604.3.2	Learn business requirements, dimensional modeling for designing database schemas for a Data Warehouse.
BTCME604.3.3	Understand the Data And Data Mining Principles.
BTCME604.3.4	Illustrate frequent pattern mining methods, such as Apriori, ECLAT, and Fpgrowth.
BTCME604.3.5	Identify appropriate data mining algorithms to solve real world problems.
BTCME604.3.6	Apply different data mining techniques for classification and prediction.

Subject	OPEN ELECTIVE-I: MOBILE COMPUTING(Theory)
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code	BTCME605.2T(ii)
Sr No.	Course Outcome
BTCME605.2T.1	Student will be able to analyze the Mobile networking.
BTCME605.2T.2	Student will be able to identify the issues involved in it.
BTCME605.2T.3	Students to understand Methods used in Mobile Computing.

Subject	EMERGING TECHNOLOGY LAB-II(Practical)
code	BTCME606P
Sr No.	Course Outcome
BTCME606P.1	Students will develop an understanding of ET and their potential applications in various fields.
BTCME606P.2	Students will develop practical skills related to NLP and NLTK.
BTCME606P.3	Students will become proficient in using KNIME for various data analytics tasks.

BTCME606P.4	Students will develop practical skills related to IoT and Device Hub.
BTCME606P.5	Students will develop practical skills related to supply chain management and Mainspring.

Subject	MINI PROJECT & INTERNSHIP(Practical)
code	BTCME607P
Sr No.	Course Outcome
BTCME607P.1	Acquire practical knowledge within the chosen area of technology for project development
BTCME607P.2	Identify, analyze, formulate and handle programming projects with a comprehensive and systematic
BTCME607P.3	Contribute as an individual or in a team in development of technical projects
BTCME607P.4	Develop effective communication skills for presentation of project related activities
BTCME607P.5	Prepare a documentation on developed project
BTCME607P.6	Understand the conferences & Journals paper Format.

7th Semester

Course Outcome

Subject	Cryptography And Network Security(Theory)
code	BTCME701T
Sr No.	Course Outcome
BTCME701T.1	To understand basics of Cryptography and Network Security and classify the symmetric encryptions techniques
BTCME701T.2	To understand ,analysye and implement the symmetric key algorithm for secure transmission of data.
BTCME701T.3	Acquire fundamental knowledge about the diagram of mathematics of assymmetric key cryptography and understand and analys asymmetric key encryption algorithm and digital signature
BTCME701T.4	Analys the concepts of message integrity and the algorithm for checking the integrity of data
BTCME701T.5	to understand various protocols for network security to protect against threats in the network

Subject	Cryptography And Network Security(Practical)
code	BTCME701P

Sr No.	Course Outcome
BTCME701P.1	Acquire knowledge about security goals background of cryptography mathematics and identification of its application
BTCME701P.2	Understand, Analyse and Implement - the symmetric key algorithm
BTCME701P.3	Acquire knowledge about the background of mathematics of Asymmetric Key Cryptography and understand and analyse - Asymmetric key encryption algorithm, digital signature
BTCME701P.4	Analyse the concept of message integrity and the algorithm for checking the Integrity of data
BTCME701P.5	Understand and analyse the existing Cryptosystem used in networking

Subject	Deep Learning(Theory)
code	BTCME702.1T
Sr No.	Course Outcome

BTCME702.1T.1	Understand the basics of deepa learning algorithms
BTCME702.1T.2	Represent feed forward neural network
BTCME702.1T.3	Evaluate the performance of different deep learning models with respect to the optimization, bias various trade-off, overfitting and underfitting
BTCME702.1T.4	Apply the convolution network in context with real world problem solving
BTCME702.1T.5	Apply recurrent neural networks in context with real world problem solving.

Subject	Block Chain Technology(Theory)
code	BTCME702.2T
Sr No.	Course Outcome
BTCME702.2T.1	Describe the basic concept and technology used for Block Chain
BTCME702.2T.2	Describe the primitive of the distributed computing and cryptography related to block chain

BTCME702.2T.3	Illustrate the concept Bitcoin and their uses
BTCME702.2T.4	Implement Ethereum Block Chain Contract
BTCME702.2T.5	Apply Security features in Block chain Technology and use smart contract in real world application

Subject	Augmented and Virtual Reality (Theory)
code	BTCME702.3T
Sr No.	Course Outcome
BTCME702.3T.1	Understand the basics of Augmented and Virtual Reality System with the help of Input and Output Device
BTCME702.3T.2	Summarize the basic concept and hardware and software of Augmented reality system
BTCME702.3T.3	Analyse manipulation, navigation and interaction of element in the virtual world using tools.
BTCME702.3T.4	Apply the concept of technology in the real world application of entertainment

BTCME702.3T.5	Accept the challenges in application of Augmented and virtual reality
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Subject	Sales Force Technology (Theory)
code	BTCME702.4T
Sr No.	Course Outcome
BTCME702.4T.1	Develop skills in configuring and managing sales force organization.
BTCME702.4T.2	Understanding sales force data management.
BTCME702.4T.3	Implementing automation, security and debugging data.
BTCME702.4T.4	Acquire Programming in Apex, Sales Force Programming Language.
BTCME702.4T.5	Enable to extend and customize sales force to meet specific business requirement.

Subject	Compile Design (Theory)
code	BTCME703.1T
Sr No.	Course Outcome
BTCME703.1T.1	Define the Compiler Along with the phase and basic program in LEX.
BTCME703.1T.2	Understand the parser and its types i.e Top-down and bottom-up Parser and construction of parsing table.
BTCME703.1T.3	Implement program based on concept of type checking parameter passing and overloading.
BTCME703.1T.4	Implement the concept of code optimization and code generation.
BTCME703.1T.5	Understand the concept of object oriented in compiler.

Subject	Natural Language Processing (Theory)
code	BTCME703.2T
Sr No.	Course Outcome

BTCME703.2T.1	Understand the basic concept and application of natural language processing (NLP).
BTCME703.2T.2	Identify the challenges in NLP and evaluate the solutions to these challenges.
BTCME703.2T.3	Analyse and Preprocess text data for NLP task
BTCME703.2T.4	Apply Different NLP technique and algorithm such as text classification, information retrieval and extraction, syntactic and symmentic analysis and deep learning model.
BTCME703.2T.5	Evaluate and compare different NLP technique and algorithm using appropriate metrics.

Subject	Introduction to Software Testing (Theory)
code	BTCME703.3T
Sr No.	Course Outcome
BTCME703.3T.1	Understand the role of Software testing and quality assurance.
BTCME703.3T.2	Acquire the knowledge of test case strategies using white and black box approach.
BTCME703.3T.3	Understand and apply the different levels of testing.

BTCME703.3T.4	Develop and analyze the software testing process & management skills.
BTCME703.3T.5	Develop & Evaluate the software testing tools for commercial applications.

Subject	The Joy Of Computing using Python (Theory)
code	BTCME704.1T
Sr No.	Course Outcome
BTCME704.1T.1	Develop proficiency in Python programming language and apply it to solve computational problems.
BTCME704.1T.2	Use data structures and libraries in Python to manage data and perform advanced data analysis tasks.
BTCME704.1T.3	Design and analyze algorithms to solve problems efficiently and effectively.
BTCME704.1T.4	Apply problems-solving strategies and techniques using Python to solve real-world problems.
BTCME704.1T.5	Demonstrate knowledge of advanced Python topics and their applications in various domains.

Subject	Database Management System (Theory)
code	BTCME704.2T
Sr No.	Course Outcome
BTCME704.2T.1	Understand the basics of DBMS to analyse an information problem in the form of an Entity relation diagram and design an appropriate data model for it.
BTCME704.2T.2	Demonstrate basics of file Organizations and its types.
BTCME704.2T.3	Interpret functional dependencies and various normalization forms.
BTCME704.2T.4	Perform basic transaction processing and management.
BTCME704.2T.5	Demonstrate SQL queries to perform CRUD (Create, Retrieve, Update, Delete) operations on database.

Subject	Data Visualization (Theory)
code	BTCME704.3T
Sr No.	Course Outcome

BTCME704.3T.1	Apply statistical methods for Data Visualization.
BTCME704.3T.2	Gain Knowledge on R and Python.
BTCME704.3T.3	Understand usage of various packages in R and Python.
BTCME704.3T.4	Demonstrate knowledge of Watson studio.
BTCME704.3T.5	Apply data visualization tools on various data sets.

8th sem

Course Outcome

Subject	Social Networks
code	BTCME801.1T
Sr No.	Course Outcome
BTCME801.T.1	Learn Social Network, its types and representation.
BTCME801.T.2	Understand weak ties strong and weak relationship homophily and calculate.
BTCME801.T.3	Analyse links.
BTCME801.T.4	Understand power laws and Rich-Get-Richer Phenomena

BTCME801.T.5	Understand Small World Phenomenon
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Subject	Reinforcement Learning
code	BTCME801.2T
Sr No.	Course Outcome
BTCNE801.2T.1	Understand Bandit algorithm and its mathematical formulation.
BTCNE801.2T.2	Use dynamic programming for reinforcement learning
BTCNE801.2T.3	Perform function approximation and apply LSM
BTCNE801.2T.4	Fit Q, DQN & Policy Gradient for Full RL
BTCNE801.2T.5	Use combinatorial models for complex problems

Subject	GPU Architecture and Programming
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code	BTCME801.3T
Sr No.	Course Outcome
BTCME801.3T.1	Understand conventional CPU architecture, their extensions for single instruction multiple data processing(SMD)
BTCME801.3T.2	Program in CUDA about data space & synchronization
BTCME801.3T.3	Apply optimization on kernals, treads etc
BTCME801.3T.4	Learn basics of OpenCL
BTCME801.3T.5	Design an application using neural networks

Subject	Predictive Analytics - Regression and Classification
code	BTCME802.1T
Sr No.	Course Outcome
BTCME802.1T.1	To understand predictive models, LMS, Normal equations and GMT

BTCME802.1T.2	Understand regression models and infer its statistical interference
BTCME802.1T.3	Check model assumptions and bias variance tradeoff.
BTCME802.1T.4	Perform regression analysis in various programming languages
BTCME802.1T.5	Apply regression models and classification for predictive analysis

Subject	Data Analytics using Python
code	BTCME802.2T
Sr No.	Course Outcome
BTCME802.2T.1	Understand Data analytics using python Fundamentals.
BTCME802.2T.2	Perform sampling using various methods and perform hypothesis test or ANOVA test
BTCME802.2T.3	Fit linear regression model and calculate various errors
BTCME802.2T.4	Apply ROC

BTCME802.2T.5	Apply clustering classification using python programming
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Subject	Cloud Computing
code	BTCME802.3T
Sr No.	Course Outcome
BTCME802.3T.1	Understand on -demand computing service for shared pool of resources, namely servers, storage, networking, software, database, applications etc.
BTCME802.3T.2	Understand cloud model for enabling ubiquitous, on-demand access to a shared pool of configurable computing resources, which can be rapidly provisioned and released with minimal management effort.
BTCME802.3T.3	Create a cloud and use simulator softwares
BTCME802.3T.4	Perform VM resource management and cloud fog edge enabled analytics.
BTCME802.3T.5	Practice case studies and understand advanced research areas


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Madhukarrao Pandav College Of Engineering Bhilewada, Bhandara
Department of Electrical Engineering
3rd Semester (Btech)
Course Outcome

Name of Course:	Electrical Engineering Mathematics(theory)
Course Code:	BEEE301T
Sr.No.	Course Outcome
C0301T.1	Solution of Partial Differential Equations of First Order First Degree, Numerical Solution to Ordinary differential equations
C0301T.2	Formulation and solving the systems with complex variables
C0301T.3	Understanding the basics of various Transforms and converting the functions into required transforms, Laplace Transforms analysis and its application to solve differential equations
C0301T.4	Application of Differential equations and Laplace Transform for mathematical model formulation of the physical systems, Understanding the concept of transfer function
C0301T.5	Understanding the concepts of Stochastic analysis and its application

Name of Course:	NETWORK ANALYSIS(theory)
Course Code:	BEEE302T
Sr.No.	Course Outcome
C0302T-1	Apply mesh current and node voltage methods to analyze electrical circuits
C0302T-2	Apply network theorems for the analysis of networks.
C0302T-3	Obtain transient and steady-state responses of electrical circuits
C0302T-4	Synthesize waveforms and apply Laplace transforms to analyze networks.
C0302T-5	Evaluate different Network Functions and understand two port network behavior

Name of Course:	ELECTRICAL MEASUREMENT AND INSTRUMENTATION(theory)
Course Code:	BEEE303T
Sr.No.	Course Outcome
C0303T-1	Various aspects of measurement and instrumentation.
C0303T-2	Different active and passive components measurement methods.
C0303T-3	Power and Energy measurement
C0303T-4	Instrument Transformers
C0303T-5	Aspects and types of transducers

Name of Course:	ANALOG DEVICES AND CIRCUITS(theory)
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Course Code:	BEEE304T
Sr.No.	Course Outcome
C0304T-1	Design and Analyze rectifier circuits
C0304T-2	Understand the characteristics and use of a transistor as amplifiers
C0304T-3	. Apply the knowledge of transistor for the analysis of power amplifiers and oscillators.
C0304T-4	Understand OP-AMPs.
C0304T-5	Analyze and utilize OP-AMPs

Name of Course:	RENEWABLE ENERGY STUDIES(theory)
Course Code:	BEEE305T

Sr.No.	Course Outcome
C0305T-1	Memorize the fundamental of solar radiation geometry
C0305T-2	Identify and analyse the process of power generation through solar photovoltaic
C0305T-3	Highlighting the various applications of Solar Energy.
C0305T-4	Outline the site requirement criteria for wind farm & compare different types of wind generators.
C0305T-5	Identifying non-conventional Energy sources such as Geothermal, MHD, Biomass, Fuel cell, Tidal, Ocean for generating Electricity.

Name of Course:	INTRODUCTION TO PYTHON PROGRAMMING(theory)
Course Code:	BEEE306T
Sr.No.	Course Outcome

C0306T-1	Identify different operators and execute different programs using loops
C0306T-2	Analyse Strings, List, Tuples, Dictionary and Sets
C0306T-3	Illustrate functions and utilise Date Time in programming language.

Name of Course:	Environmental studies(theory)
Course Code:	BEEE307T
Sr.No.	Course Outcome
C0307T-1	Understand Air pollution and its control techniques
C0307T-2	Understand Water pollution and its control techniques
C0307T-3	Understand Various Environmental Management Pollutions & Waste

CO307T-4	Understand Social Issues and the Environmental Laws
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Madhukarrao Pandav College Of Engineering Bhilewada,
Bhandara
Department of Electrical Engineering
4TH Semester (Btech)
Course Outcome

Name of Subject:	SIGNAL AND SYSTEMS
Course Code:	BEEE401T
Sr.No.	Course Outcome
CO401T-1	Understanding the basics of signal space theory of connectivity and constraint satisfaction.
CO401T-2	Understanding the concepts of state space representation
CO401T-3	Understand convolution sum of two signals

CO401T-4	Apply Fourier and Laplace transforms, understand the duality Apply DFT, DTFT and ztransform
CO401T-5	Understand the concept of sampling and reconstruction

Name of Subject:	DIGITAL ELECTRONICS(theory)
Course Code:	BEEE402T
Sr.No.	Course Outcome
CO402T-1	Understand number system, logic gates and logic families
CO402T-2	Design and implement combinational digital circuits.
CO402T-3	Design and implement sequential logic circuits
CO402T-4	Understand the process of Analog to Digital conversion and Digital to Analog conversion

CO402T-5	Understand memories and PLDs to implement given logic.
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Name of Subject:	ELECTRICAL MACHINES-I(theory)
Course Code:	BEEE403T
Sr.No.	Course Outcome
CO403T-1	Determine Equivalent Circuit parameter, Efficiency and Regulation of Single Phase Transformer and to Explain the Phasor groups of Three Phase Transformer
CO403T-2	Analyze different characteristics of D. C. Motor and Speed Control of D.C. Motor
CO403T-3	Explain different types of Three Phase Induction Motor and Analyze the characteristics at different Value of Slip
CO403T-4	Know Voltage Regulation of Three Phase Synchronous Generator and Behavior of Synchronous Motor with Different Excitations
CO403T-5	Understand Single Phase Machines and Special Machines

Name of Subject:	POWER SYSTEM
Course Code:	BEEE404T
Sr.No.	Course Outcome
CO404T-1	Understand the basic structure of powersystem , smart grid and microgrid.
CO404T-2	Model and represent the power systemcomponents in its per unit value.
CO404T-3	Learn the parameters of transmission linesand cables
CO404T-4	Evaluate the performance of transmissionlines.
CO404T-5	Acquaint with the method of load flowanalysis and the concept of voltage stability.

Name of Subject:	ELECTROMAGNETIC FIELDS
Course Code:	BEEE405T
Sr.No.	Course Outcome
CO405T-1	Recognize and apply the knowledge of different co-ordinate systems.
CO405T-2	Evaluate the physical quantities of electromagnetic fields in different media and apply Gauss law
CO405T-3	Describe static electric fields boundary conditions, nature of dielectric materials and evaluate potential fields.
CO405T-4	Explain steady magnetic fields, their behavior in different media, associated laws and inductance.
CO405T-5	Understand Maxwell's equations in different forms and different media.

Name of Subject:	SIMULATION & PROGRAMMING TECHNIQUES(theory)
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Course Code:	BEEE406T
Sr.No.	Course Outcome
CO406T-1	Learn the basics of C programming and apply the knowledge for developing small programs including Function
CO406T-2	Apply the knowledge of C language for developing simple programs using variables, arrays, structures etc. for applications like searching and sorting, use of pointers & File handling functions.
CO406T-3	Understand the basics of C++.
CO406T-4	Study the basic of MATLAB and apply fundamental knowledge for analysis of basic engineering problems.
CO406T-5	Apply knowledge of MATLAB, Toolboxes and Simulink to solve matrix equations, plot graphs, build and analyze simple electrical circuits..

Madhukarrao Pandav College Of Engineering Bhilewada, Bhandara
Department of Electrical Engineering
5TH Semester (Btech)
Course Outcome

Name of Subject:	Microprocesor And Microcontroller(Theory)
Course code:	BTCHEE501T
Sr No.	Course Outcome
C0501T-1	Describe Internal Organization of 8085 and 8086 Microprocessors and 8051 Microcontrollers.
C0501T-2	Describe The Concept Of Addressing Modes And Timing Diagram Of Microprocessor.
C0501T-3	Interface 8085 & 8051 With Keyboard/Display, ADC/DAC, Stepper Motor etc.
C0501T-4	Demonstrate The Concept of Interrupts And its Use.
C0501T-5	Demonstrate The Concept of Serial & Parallel Data Communication
C0501T-6	describe Handshaking Concept And Interfacing With Peripheral Devices.

Name of Subject:	Control System (Theory)
Course code:	BTCHEE502T
Sr No.	Course Outcome
C0502T-1	Model The Linear Systems And Study The control System components Specifications Through classical approach
C0502T-2	Understand The Time Response and Time Response specification And Different Controller.
C0502T-3	Analyze The Absolute Stability And Analyze The Relative Stability Through Root Locus Method
C0502T-4	Frequency Response Tools Like Bode Plote and Nyquist plot
C0502T-5	Understand The Concepts Of state variable approach.

Name of Subject:	Power Electronics (Theory)
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Course code:	BTCHEE503T
Sr No.	Course Outcome
C0503T-1	Knowledge Of Different Types Of Semiconductor switches and their characteristics.
C0503T-2	Knowledge of different types of power conversion system with their operation.
C0503T-3	Knowledge of various rectifier circuits at loading conditions.
C0503T-4	knowledge of various operating modes of inverter and control circuit.
C0503T-5	Knowledge of different DC-DC conversion circuit and four quadrant operation.

Name of Subject:	Advance Electrical Power system
Course code:	BTCHEE504T

Sr No.	Course Outcome
C0504T-1	Apply symmetrical components concepts in fault analysis.
C0504T-2	Evaluate Fault currents for different types of faults.
C0504T-3	Appreciate Concepts of power system stability.
C0504T-4	Understand methods to control the voltage, frequency and power flow.
C0504T-5	Understand economic operation of power system.

Name of Subject:	Professional elective-I Electrical Machines-II
Course code:	BTCHEE505T
Sr No.	Course Outcome

C0505T-1	To explain speed control & electric braking in AC & DC Machines
C0505T-2	To analyses and compare voltage regulation method and parallel operation of alternator
C0505T-3	To explain two reaction theory of salient pole synchronous machines & slip test.
C0505T-4	To analyses power flow in synchronous machine, comparison, applications and working of reluctance motor and PM ac motors.
C0505T-5	To Describe Transient behavior of synchronous machine under the sudden short circuit, determination of reactance's.

Madhukarrao Pandav College Of Engineering Bhilewada,
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Department of Electrical Engineering
6TH Semester (Btech)
Course Outcome

Name of Subject:	Engineering Economics & Management
Course code:	BTCHEE601T

Sr No.	Course Outcome
C0601T-1	Understand the concept of demand and supply and its relationship with the price
C0601T-2	Relate various factors of production with reference to different economic sectors
C0601T-3	Analyze the causes and effects of inflation and understand the market structure
C0601T-4	Acquire knowledge of various functions of management and marketing management
C0601T-5	Perceive the concept of financial management for the growth of business.

Name of Subject:	Computer Applications In Power system(Theory)
Course code:	BTCHEE602T
Sr No.	Course Outcome

CO602T-1	Students will be able to determine bus Impedance & Admittance matrix by singular transformation for power system.
CO602T-2	Determine bus Impedance & Admittance matrix by inspection and building algorithm and able to accommodate changes in Power System
CO602T-3	Do the Short circuit calculation for symmetrical and unsymmetrical fault using bus impedance and admittance matrix.
CO602T-4	Do the load flow analysis by N-R method and Transient stability analysis by Modified Eulers method.

Name of Subject:	Switch gear & Protection(Theory)
Course code:	BTCHEE603T
Sr No.	Course Outcome
CO603T-1	Understand basic terminology of Protective Relaying, different types of faults and components used in Power System protection.
CO603T-2	Apply over-current protection schemes for Medium voltage lines.

C0603T-3	Apply various distance protection schemes for High voltage lines.
C0603T-4	Understand differential and other protections used for Generator, Transformer and Motors
C0603T-5	Comprehend switching phenomenon and working of various types of circuit breakers.

Name of Subject:	Professional elective-II Electrical Drives and Their Control (Theory)
Course code:	BTCHEE605T
Sr No.	Course Outcome
C0605T-1	Understand the concept of Electrical characteristics like starting, speed control and braking along with numerical
C0605T-2	Relate various factors of industries with reference to PLC, its programming and Digital Control
C0605T-3	Analyze the causes and effects of motor control used in Electric Vehicle

C0605T-4	Acquire knowledge of various electrical drives used in industries, AC & DC contactors and work on drives used in Industries
C0605T-5	Perceive the concept of Electric traction and their control strategies used in practice.

Name of Subject:	Open electives-I Solar PV Systems(Theory)
Course code:	BTCHEE604T
Sr No.	Course Outcome
C0604T-1	Review Solar Tracking, tracking control and find heat radiation related queries.
C0604T-2	Analyse the simple modal of PV cell and PV Modules
C0604T-3	Analyse the balance of Solar PV Systems having battery and inverter
C0604T-4	Demonstrate various Photovoltaic system configuration

CO604T-5	Apply Solar PV to Various Distributed Generation and Smart Consumption
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Madhukarrao Pandav College Of Engineering Bhilewada, Bhandara
Department of Electrical Engineering
7TH Semester (Btech)
Course Outcome

Name of Subject:	Professional Elective-III High Voltage Engineering
Course code:	BTCHEE701T
Sr No.	Course Outcome
C0701T-1	Understand breakdown mechanism in gases Liquid and Solid medium
C0701T-2	Knowledge of lightening and switching over-voltages
C0701T-3	Analyze different methods of generation of high voltage and currents in laboratory

C0701T-4	Analyze different methods of measurement of high voltage and currents in laboratory
C0701T-5	Analyze different methods of non destructive and High Voltage testing of Apparatus and cables in laboratory

Name of Subject:	Professional Elective-IV(Theory) Electrical Installation & Design
Course code:	BTCHEE702T
Sr No.	Course Outcome
C0702T-1	Understand concept of electrical load assessment and basics of busbar and cables.
C0702T-2	Identify switches for smooth functioning of protective scheme utilized fo short circui calculations.
C0702T-3	Analyze Power and control circuit for industrial application utilizing reactive power Managiecut.
C0702T-4	Apply industrial installations and earthling system design.

C0702T-5	Inferring the design of 11 kV and 33 kV substations for industrial installations .
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Name of Subject:	Professional Elective-V(Theory) -Electric and Hybrid Vehicles
Course code:	BTCHEE703T
Sr No.	Course Outcome
C0703T-1	Explain electric vehicle characteristics and typologies.
C0703T-2	Identify and analyze the process of power management system
C0703T-3	Analyze various power electronics devices in electric vehicles.
C0703T-4	Outline the types and size of electric motors in electric and hybrid vehicles.
C0703T-5	Identifying electric motor and internal combustion engine match and energy management strategies.

Name of Subject:	Open Elective-II(Theory) -Power Plant Engineering
Course code:	BTCHEE704T
Sr No.	Course Outcome
C0704T-1	Electrical energy, economic and environmental issues
C0704T-2	Operation of Thermal power Plant.
C0704T-3	Subsystems of thermal power plants and cogeneration systems
C0704T-4	Operation of Hydroelectric Power Plants
C0704T-5	Operation of Nuclear Energy Conversion

Name of Subject:	Project Phase: 1
Course code:	BTCHEE708P
Sr No.	Course Outcome
CO708P-1	Do literature survey using library, internet, technical journals, product catalog, datasheets etc for a defined area.
CO708P-2	Demonstrate a sound technical knowledge of their selected project topic.
CO708P-3	Analyze and assemble the basic information to find solution of a complex engineering problem by using suitable methodology/procedure.
CO708P-4	Communicate with engineers and the community at large in written and oral forms.
CO708P-5	Demonstrate the knowledge and Enhance the self study , skills and attitudes of a professional engineer.
CO708P-6	Preapare document and report the project work carried out and proposed work in an appropriate format.

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Department of Electrical Engineering

8TH Semester (Btech)

Course Outcome

Name of Subject:	Electrical Safety & Standards
Course code:	BTCHEE801T
Sr No.	Course Outcome
CO801T-1	Understand the Indian power sector organization and Electricity rules, electrical safety in residential, commercial, agriculture, hazardous areas .
CO801T-2	Outline the electrical safety during installation, testing and commissioning procedure.
CO801T-3	Make use of specification of electrical plants and classification of safety equipment for various hazardous locations.
CO801T-4	Understand Safety Management & Standards in Electrical Systems.

Name of Subject:	Advance Professional Elective-IV- Power Semiconductor Drives
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Course code:	BTCHEE802T
Sr No.	Course Outcome
CO802T-1	Understand dynamics of electric drives used in industry with steady state stability.
CO802T-2	Apply the knowledge of various converters control methods used for DC drives.
CO802T-3	Analyze control topologies used for induction motor applicable to various industrial Applications.
CO802T-4	Execute the basics of Industrial drives used for special applications.
CO802T-5	Attribute the traction drives using ac and dc motors with advanced control.

Name of Subject:	Advance Professional Elective-VII -EHVAC/DC Transmission System
Course code:	BTCHEE803T

Sr No.	Course Outcome
C0803T-1	Understand dynamics of electric drives used in industry with steady state stability.
C0803T-2	Apply the knowledge of various converters control methods used for DC drives.
C0803T-3	Analyze control topologies used for induction motor applicable to various industrial Applications.
C0803T-4	Execute the basics of Industrial drives used for special applications.
C0803T-5	Attribute the traction drives using ac and dc motors with advanced control.

Name of Subject:	Project Phase: 2
Course code:	BTCHEE804P
Sr No.	Course Outcome

CO804P-1	Apply technical & Managerial skills for analysis, design, simulation & modeling of Engineering problems.
CO804P-2	Learn the time & Finance management for task completion in a group with professional ethics.
CO804P-3	Present their work in a professional manner.
CO804P-4	Enhance the skills of self study and lifelong learning.
CO804P-5	Demonstrate the knowledge and Enhance the self study , skills and attitudes of a professional engineer.
CO804P-6	Document and report the project work carried out in appropriate format.


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MADHUKARRAO PANDAV COLLEGE OF ENGINEERING

BHILEWADA BHANDARA

Course Outcome

Department of Applied Sciences & Humanities

B.Tech 1st Semester

Course Outcome

Subject :	Mathematics – I(Theory)
Code:	(BSE1-1T)
Sr. No.	Course Outcome
1	Analyze real world scenarios to recognize when derivatives or integrals are appropriate, formulate problems about the scenarios, creatively model these scenarios (using technology, if appropriate) in order to solve the problems using multiple approaches, judge if the results are reasonable, and then interpret and clearly communicate the results.
2	Appreciate ODE and system of ODEs concepts that are encountered in the real world, understand and be able to communicate the underlying mathematics involved to help another person gain insight into the situation.
3	Apply knowledge of mathematics, physics and modern computing tools to scientific and engineering problems.
4	Develop an ability to identify, formulate and/or solve real world problems.
5	Understand the impact of scientific and engineering solutions in a global and societal context.

Subject :	Applied Physics (Theory)
Code:	((BSE1-2T)
Sr. No.	Course Outcome
1	Apply concepts in interference and diffraction to solve relevant numerical problems and to relate to relevant engineering applications
2	Learn the basic concepts of dual nature of matter and wave packet and apply them to analyze various relevant phenomena and to solve related numerical problems
3	Recall the basic concepts of crystal structure and apply them in solving numerical problems based on them and in relating to applications for determination of crystal structure.
4	Relate the basic idea of total internal reflection to the propagation of light in an optical fiber and make use of the fiber concepts to solve numerical problems and relate to applications in engineering
5	Find how to extend the basic concepts of motion of charged particles in electric magnetic fields to solve numerical problems and to relate to applications in electron optic devices and CRO

Subject :	Energy & Environment (Theory)
Code:	(BSE1-3T)
Sr. No.	Course Outcome
1	Obtain the knowledge of solid and gaseous fuels and their Calorific Value determination.
2	Recognize the type of liquid fuels and their uses in IC engines.
3	Apply the knowledge about the use of alternative sources of energy& utilize solid waste as energy source
4	Analyze the impacts of Industrial pollution and its control.
5	Develop innovative ideas for use of advanced materials in sustainable development.
Subject :	Energy & Environment (Practical)
Code:	(BSE1-3P)
Sr. No.	Course Outcome
1	The practical knowledge of handling chemicals.
2	Analysing a broad foundation in energy and environment that stresses scientific reasoning and analytical problem solving with a molecular perspective.
3	Experimental techniques using modern instrumentation.

Subject :	Communication Skills (Theory)
Code:	(BSE1- 4T)
Sr. No.	Course Outcome
1	Students will be able to overcome listening barriers of communication.
2	Student will be acquired public speaking skills and handle group situation professionally.
3	Students will be able to comprehend passage and composed paragraphs.
4	Students will be able to construct error free and meaningful sentences in English.

Subject :	Communication Skills (Practical)
Code:	(BSE1- 4P)
Sr. No.	Course Outcome
1	Students will be able to overcome listening barriers of communication.
2	Students will be able to enhance their comprehending skills and speaking skills.
3	Students will be able to give effective presentations and handle group situations professionally.
4	Students will be able to use figurative language in their formal as well as informal communication.

Subject :	Engineering Graphics(Theory)
Code:	(BSE1-5T)
Sr. No.	Course Outcome
1	The learner will be able to understand the basic knowledge of engineering graphics such as instruments, lines, dimensioning techniques, scales, sheets layout. Construct the various engineering curves using the drawing instruments and basic of orthographic projection through drawing the projection of point and line.
2	The learner will be able to understand projections of different types of plans(2D) and solids (3D) and will be able to draw different views of plan and solids.
3	The learner will be able to understand concept of sectioning and development of lateral surfaces of solid and will be able to represent it.
4	Apply the visualization skill to draw a simple isometric projection/view from given orthographic views precisely using drawing equipment.

Subject :	Engineering Graphics(Practical)
Code:	(BSE1-5P)

Sr. No.	Course Outcome
1	Draw the fundamental engineering objects using basic rules and able to construct the lines, simple geometries. Construct the various engineering curves using the drawing instruments.
2	Draw two dimensional and three dimensional objects precisely using drawing equipment.
3	Draw the development lateral surfaces for cut section of geometric solids precisely using drawing equipment.
4	Draw a simple isometric projection from given orthographic views precisely using drawing equipment.

Subject :	Basics of Civil and Mechanical Engineering
Code:	(BSE1-6T)
Sr. No.	Course Outcome
1	Introduction to what constitute Civil engineering. Identifying the various areas available to pursue and specialized within the overall field of civil engineering. Highlighting the depth of engagement possible within each these areas.
2	Exploration of the various possibilities of a career in this field. Understanding the vast interfaces this field has with the society at large, providing inspiration for doing creative and innovative work.
3	Show casing the many monuments, heritage structures, nationally important infrastructure and impressive projects to serve as sources of inspiration. Highlighting possibilities for taking a interprenurial activities in this field.. Providing a foundation for the student to lunch off upon and inspire academic persuit into this branch of engineering.
4	Discuss several manufacturing processes and identify the suitable process. Explain various type of mechanism and its application.
5	Describe and compare the conversion of energy from renewable and non-renewable energy sources.
6	List down the type of road vehicles and their specifications; Illustrate various basic parts and transmission system of road vehicle.

**MADHUKARRAO PANDAV COLLEGE OF ENGINEERING
BHILEWADA BHANDARA**

Course Outcome

Department of Applied Sciences & Humanities

B.Tech 2nd Semester

Course Outcome

Subject :	Mathematics – II(Theory)
Code:	(BSE2-1T)
Sr. No.	Course Outcome
1	Analyze real world scenarios to recognize when integrals are appropriate, formulate problems about the scenarios, creatively model these scenarios (using technology, if appropriate) in order to solve the problems using multiple approaches, judge if the results are reasonable, and then interpret and clearly communicate the results.
2	Define and understand the geometry of vector differential operators and line and surface integrals.
3	Explain and apply principles of study design and data collection.
4	Develop an ability to identify, formulate and/or solve real world problems.
5	Understand the impact of scientific and engineering solutions in a global and societal context.

Subject :	Advanced Engineering Materials (Theory)
Code:	(BSE2-2T)
Sr. No.	Course Outcome
1	Learn the concept of formation of energy bands and to classify solids on its basis.
2	Identify and explain different types of diodes, transistors and its applications
3	Learn the concepts of magnetism and superconductivity, classify and analyze various types of magnetic and superconducting materials.
4	Learn and explain quantum transitions and apply it to working of lasers.
5	Learn the concept of Nano materials and compare its properties with those of bulk materials.


Subject :	Advanced Engineering Materials (Practical)
Code:	(BSE2---2P)
Sr. No.	Course Outcome
1	To acquaint the students with the basic concepts of Chemistry, and their applications in the Engineering field.
2	To impart basic knowledge related to ranges of the electromagnetic spectrum used for

	exciting different molecular energy levels in various spectroscopic techniques
3	To provide an insight into Green Chemistry and its applications in engineering fields.
4	To enable the student to upgrade the existing knowledge of water technologies and to Enhance the thinking capabilities in line with the modern trends in Engineering and technology.
5	To gain the knowledge on properties of materials, and protection of materials from corrosion.

Subject :	APPLIED CHEMISTRY (Theory)
Code:	(BSE2-3T)
Sr. No.	Course Outcome
1	.Rationalize the periodic properties and analyze the Microscopic Chemistry in terms of atomic and molecular orbital.
2	Rationalize bulk properties and processes using thermodynamic processes & understand the causes of corrosion, its consequences and methods to minimize corrosion.
3	Distinguish the ranges of the electromagnetic spectrum used for exciting different molecular energy levels in various spectroscopic techniques.
4	Apply the principles of green chemistry in designing alternative reaction methodologies to minimize hazards and environmental degradation.
5	Know about treatment of water and its applications in industry.
Subject :	APPLIED CHEMISTRY (Practical)
Code:	(BSE2-3P)
Sr. No.	Course Outcome
1	Measure molecular/system properties like, concentrations, surface tension, conductance of solution etc.
2	Estimate the soluble impurities present in the given water sample
3	Handle the different instruments used in chemistry laboratory.

Subject :	Engineering Mechanics(Theory)
Code:	(BSE2- 7T)
Sr. No.	Course Outcome
1	Students will be able to find effect of force on a body.
2	Students will be able to analyze the effect of a system of forces on a given body with the concept of equilibrium and free body diagram.
3	Students will be able to calculate centroid /C.G. and moments of inertia.
4	Students will be able to problem of connected bodies by virtual work principle.
5	Students will be able to problem of connected bodies by work energy D. Alembert's principle.
6	Students will be able to problems connected bodies by impact, impulse.
Subject :	Indian Culture and Constitution(Theory)
Code:	(BSE2-8T)
Sr. No.	Course Outcome

1	Students will become aware of Indian culture and civilization and their role in development of society.
2	Students will understand industrial work –culture.
3	Students will be sensitized towards professional ethics.
4	Students will be understood Indian constitution and governance of the country.
5	Students will be able to understand the structure and system of work organization.



Department of 1st year Engineering
Madhukarrao Pandav College of
Engineering, Bhiwani, Bhandara

MADHUKARRAO PANDAV COLLEGE OF ENGINEERING BHILEWADA, BHANDARA
Program Outcomes & Detailed Course Objectives

MBA (CBCS) New

MBA CBCS (Sem-I)

Course Name	INDUCTION cum FOUNDATION COURSE
CO1	Given a presentation/ debatable topic, discussion, training, the students will be able to understand voice modulation, nuances of diction and articulation which will in turn help them in developing effective communication skills.
CO2	Given a workplace setting, the students will not only be aware about their inner qualities, inner potential and importance of human qualities but also will be able to critically assess the relationship between theory and practice in the formulation of values.
CO3	The Students will be able to perform calculations based on elementary statistics and accountancy
CO4	Given a stressful or demanding situation the students will develop skills like team work, leadership, time management and will also be able to develop self confidence, handle conflicts, be patient and work under pressure.
CO5	Given a problematic situation/ a dilemma/ a choice the students will be able to distinguish between the ethical and unethical ways and chose the right way of doing things in professional and personal life.
Course Name	MANAGERIAL ECONOMICS
CO1	Given the details regarding price and quantity, the future manager will be able to calculate and interpret price elasticity, income elasticity and cross-price elasticity of demand and will also be able examine the uses and abuses of demand forecasting techniques
CO2	Given the information about scale of production, the future manager will be able to analyze various aspects of empirical production functions and also will be able to comprehend the difference sources of economies and diseconomies of scale.

CO3	Given the information pertaining to market structure, the future manager will be able to determine the optimal price and output for firms under different market structures.
CO4	Given the circular flow model of an economy, the future manager will be able to interpret the role and importance of each component with regard to factor market and product market and will also be able to comment on the implications and control of inflation.
CO5	Given the information regarding expenses and income in an economy, the future manager will be able to calculate and explicate the gross domestic product using expenditure and income approaches and given the details about a phase of the business cycle, the future manager will be able to depict the symptoms, causes and effects on economic activities of a nation.
Course Name	MANAGEMENT INFORMATION SYSTEM
CO1	The student will be able to describe different types of management information system from management activity point of view and will also be able to identify and work out KRAs, BOPs and BPPs for various organisations/systems.
CO2	The student will be able to identify the master data, draw report format and interface matrix while making a model of DSS.
CO3	The student will be able to suggest the conceptual model of PMS and will also be able to draw a system model of integrated system (PMS+SCM+Accounting and Billing)
CO4	The student will be able to describe the key features of ERP, SCM and CRM and will also be able to draw functional flow and process flow diagrams for various transactions.
CO5	The student will be able to enumerate the factors affecting system performance and will also be able to comment on the operational feasibility of IT system under consideration
Course Name	BUSINESS RESEARCH
CO1	In context of research, the student will be able to define business research problems and will also able to formulate an abbreviated version of research proposal.
CO3	The student will be able to develop measurement tools and construct appropriate scales therein.

CO4	The student will be able to select suitable method of data collection and will be able to make questionnaire/e-questionnaire
CO5	The student will be able to derive inferences by applying various techniques of interpretation and be and write various types of research reports.
Course Name	ORGANIZATIONAL BEHAVIOUR
CO1	Students will be able to explain the concept of Organisation Design and determine the factors that affect Organisation Design.
CO2	Students will be able to identify the components of Individual Behaviour and apply the concept of Learning, Perception, Attitudes and values.
CO3	The student will be able to distinguish between the various theories of motivation and their application in organizations and also be able to apply these theories to practical problems in organizations. They will also be able to distinguish between a number of different leadership theories & styles and contribute to the effective performance of a team as the team leader or a group member.
CO4	The future managers/ students will be able to analyse the behaviour of individuals and groups in organisations in terms of the key factors that influence organisational behaviour and demonstrate skills required for working in groups (team building).
CO5	The students will be able to justify how organizational change and conflict affect working relationships within organizations and demonstrate how to apply relevant theories to solve problems of change and conflict within organizations
Course Name	FINANCIAL STATEMENT REPORTING AND ANALYSIS
CO1	Given an accounting situation Students will be able to evaluate selected accounting standards and perform their application in actual practice
CO2	Given the Trial Balance and accompanying financial adjustments the future manager shall be able to prepare the financial statements and calculate the profit or loss of a firm as at the end of the financial year.
CO3	Given the financial statements a student will be able to Prepare Cash Flow statement to evaluate whether a firm is doing well financially and has sufficient cash to meet its obligations and support its growth or not.

CO4	Given the financial statements a student will be able to <i>perform</i> Ratio analysis and comment on the performance of the firm. Whether a firm is doing well or not. (As compared to its peers or year on year basis.)
CO5	Given the financial statements a student will be able to formulate common size statement, trend analysis as well as inter-firm and intra firm comparison (As compared to its peers or year on year basis.)
Course Name	BUSINESS STATISTICS & ANALYTICS FOR DECISION MAKING
CO1	For a given dataset, the student should be able estimate the dispersion / variance & symmetry of the data using various measures and draw inferences to facilitate decision making.
CO2	For a given dataset, the student should be able assess the level of association between given variables in the data using various types of correlation analysis techniques. The students should also be able to predict the values of a variable using regression analysis techniques.
CO3	For given situations a student should be able determine the various probabilities arising out of the situation and make use of probability theory and appropriate probability distributions for the purpose of decision making.
CO4	For a given research problem, student should be able to construct appropriate hypotheses and draw conclusions by using a suitable hypothesis testing procedure so as to address the research problem in question.
CO5	The student will be able to differentiate between various forms of analytics and will also be able to choose suitable analytics for decision making.
Course Name	LEGAL & BUSINESS ENVIRONMENT
CO1	Given the circumstances, the learner will be able to infer legal aspects of doing business & plan business activities. In a given situation, the learner will be able make use of provisions of the Contract Act to evaluate a contract used in commercial practice.

CO2	In a given situation, learner will be able to distinguish between various types of Companies and explain their comparative advantages and disadvantages. The learner will be able to explain the legal process involved in formation of a company and understand the relationships amongst the various stakeholders of the company.
CO3	In context of Intellectual Property Rights (IPR) the learner will understand various components of IPR and differentiate between them. The learner can also identify the uses of IPR in business
CO4	Under the given scenario, the learner will be able to describe various provisions of IT Act and will be able to use various provisions of Consumer Protection Act.
CO5	A learner will be able to analyze the elements of Social, political, economic environment around a firm.
Course Name	MANAGERIAL SKILLS FOR EFFECTIVENESS
CO1	The student will be able to make proper use of group of words, synonyms and antonyms, phrases, idioms, proverbs for effective verbal communication
CO2	The student will be able to write essays and CV using Word Processor
CO3	The student will be able to draft business letters for given situations using Word Processor
CO4	The student will be able to apply basic functions of PowerPoint and will also be able to create effective PowerPoint Presentations using templates
CO5	The student will be able to use various spreadsheet functions and will also be create useful spreadsheets

MBA CBCS (Sem-II)

Course Name	FINANCIAL MANAGEMENT
CO1	Given financial cost parameters, the future manager will be able to calculate specific cost of capital (i.e. Cost of debt, preference, equity and retained earnings) and the weighted average cost of capital for any specific given firm.
CO2	Given different financing options, the future manager will be able to analyze the effect of operating and financial leverage on EPS and recommend a suitable long term financing mix for an organization by applying EBIT-EPS analysis, Indifference Level of EBIT and Financial Break-even Analysis for
CO3	Given the cash-flows pertaining to a project, the future manager will be able to estimate projects' cash flows to distinguish between value creating and value destroying investments using time-value intensive DCF techniques (viz. NPV, IRR, discounted payback period, profitability index) and Non-DCF techniques (i.e. Payback Period and Average rate of return approach)
CO4	Given the details pertaining to elements of working capital for a given level of activity, the future manager will be able to ascertain the components of current assets and current liabilities and determine the gross and net operating working capital requirement.
CO5	Given the expected dividends, future price of shares, investor expectations and funding requirements; the future manager will be able to compute the value of a share using various dividend discount models and illustrate whether dividend is relevant for firm valuation or not.
Course Name	MARKETING MANAGEMENT
CO1	For a given marketing objective of a company the student manager will be able to develop a suitable marketing mix.
CO2	For a given product the student managers will be able to apply the three steps of target marketing: market segmentation, target marketing, and market positioning.
CO3	For various stages in the life cycle of the product the student managers will be able to recommend a suitable pricing strategy.

CO4	For a given company the student managers will be able to evaluate different distribution channel options and their suitability for the company's product.
CO5	For a given promotional objective of a company the student manager should be able to develop a suitable promotion mix (advertising, sales promotion, public relations, personal selling, and direct marketing etc.) for the product.
Course Name	HUMAN RESOURCE MANAGEMENT
CO1	Students should be able to explain the importance of Human Resource Management for an organisation and also distinguish between Personnel and HR Management.
CO2	For a given job profile, students should be able to develop a job analysis and produce a job description and job specification.
CO3	Students should be able to design a Human Resource Plan for an organisation and construct its Selection Process
CO4	Students should be able to justify the applicability of various techniques of Training
CO5	Students should be able to outline the performance appraisal process and identify and explain the utility of various modern and traditional methods of Performance Appraisal
Course Name	OPERATIONS MANAGEMENT
CO1	At the end of the course the students can apply the concept of operations management in manufacturing and service sector and will be able to plan and implement production and service related decisions.
CO2	At the end of the course the student will be able to plan production schedules and plan resources (material and machine) required for production
CO3	At the end of the course the students can design maintenance schedules in manufacturing units, identify and propose material handling equipments and implement industrial safety rules
CO4	At the end of the course the students will be able to apply the concepts of purchase, stores and inventory Management and analyze and evaluate material requirement decisions
CO5	At the end of the course the students can measure performance related to productivity and will be able to conduct basic industrial engineering study on men and machines.

Course Name	INTERNATIONAL BUSINESS
CO1	Students should be able to understand various concepts and terminologies involved in International Business and importance of international trade
CO2	Students should be able to evaluate various modes of entry in to International business and should be able to select the best mode of entry given a situation.
CO3	Students should be able to relate and discuss the presence of macro factors (PESTEL) on international business environment
CO4	Students should be able to examine and elaborate the role of various Government institutions in India which support International trade.
CO5	Students should be able to perceive the concepts in recent EXIM policy of India and relate it to the flow of FDI as well as direction of Indian foreign trade.
Course Name	CORPORATE SOCIAL RESPONSIBILITY AND SUSTAINABILITY
CO1	Given the concept of CSR, the future manager will be able to identify the various activities which can benefit the organization under the banner of CSR.
CO2	Given a chance, the future manager will be able to frame and recommend the CSR policy according to sustainable development.
CO3	Given the framework, the future manager will be able to plan the CSR activity according to the various laws and regulations.
CO4	Given the details pertaining to government and non government organizations, the future manager will be able to ascertain the role of various stakeholders in CSR activities and incorporate the guidelines issued by regulatory guidelines in CSR policy.
CO5	Given the task of CSR , the future manager will be able to plan and implement various activities to be taken under CSR activity and evaluate its effectiveness.

Course Name	COST ACCOUNTING
CO1	Given an information about basic conceptual framework of cost, the student will be able of identify/ classify different elements/ classification of cost and will be able to prepare cost sheet and prepare quotations for various business proposals
CO2	Given an information about cost, volume and profit for specific product for mention time period, a student will able to compute Break-even point, Marine of safety, Profit volume ratio, desired profit / desired sales as well as able to evaluate the decision making
CO3	Given information about relevant expenses, a student will be able to classify the cost by nature and estimate cost of operating a service
CO4	Given an information about Expenses & Income / Receipt & Payment / Projected Sales, a student will be able to prepare relevant functional level budgets for an organisation
CO5	Given an information about standard and actual performance, the student will be able to determine Direct Material and Direct Labour Variances
Course Name	MANAGEMENT CASE ANALYSIS
CO1	Given a situation a student will be able to construct SWOT for a concerned orgnaisation or situation as well as he/she will be able to indentify key actors/stakeholders in the given situation
CO2	A student will be able to evaluate the dilemma (Problem/ Issues/ Concerns) in the case.
CO3	A student will be able to develop suitable alternatives for the dilemma identified.
CO4	A student will be able to analyse and evaluate the alternatives using the theoretical framework.
CO5	A Student will be able to discuss suggest suitable roadmaps to overcome the identified dilemma.

MBA CBCS (Sem-III)

Course Name	MM1: SALES AND DISTRIBUTION MANAGEMENT
CO1	Given a situation, student manager will be able to identify appropriate Sales Forecasting method to be adopted by a company.
CO2	Given a situation of newly launched company, student manager will be able to design an effective Sales Compensation Plan for Sales Executive.
CO3	Given a situation of distribution channel of a company, student manager will be able to outline different levels of Marketing channel used by the company.
CO4	Given a situation, student manager will be able to describe the process of Supply Chain and Reverse Logistics.
CO5	Given a situation, student manager will be able to develop e-retailing strategy as a channel of distribution.
Course Name	MM2: DIGITAL AND SOCIAL MEDIA MARKETING
CO1	Given a situation, student manager will be able to identify appropriate Sales Forecasting method to be adopted by a company
CO2	Given a situation of newly launched company, student manager will be able to design an effective Sales Compensation Plan for Sales Executive.
CO3	Upon studying this module, the students will be able to build an understanding of search engines and their utility in digital marketing area. They will also comprehend optimization and the keyword search methodology.
CO4	Given a situation, student manager will be able to describe the process of Supply Chain and Reverse Logistics.
CO5	On studying this module, the student will be able to create favourable online reputation, later, as future managers, for organizations they serve. Students will also be able to form opinion on current trends in digital marketing area and estimate future trends therein.
Course Name	MM3: INTEGRATED MARKETING COMMUNICATION AND BRAND MANAGEMENT

CO1	At the end of the course the student manager shall be able to Design the Integrated marketing communication Process for a company/product
CO2	At the end of the course the student manager shall be able to develop a creative message strategy for a product and execute it.
CO3	At the end of the course the student manager shall be able to implement and evaluate a IMC campaign.
CO4	At the end of the course the student manager shall be able to Identify&Establish Brand Positioning for a given product
CO5	At the end of the course the student manager shall be able to design/develop branding strategies for a product/company, brand marketing program and shall be able to evaluate a branding program.
Course Name	FM1: INVESTMENT ANALYSIS & PORTFOLIO MANAGEMENT
CO1	The student will be able to apply concept of time value of money in computing the value of fixed income securities. The student will also be able to understand the relationship between interest rates, yield and bond prices.
CO2	The student will be able to compute and compare the value of a company's equity share with other company's equity by using various methods and tools of equity valuation
CO3	The student will be able to build and evaluate the relationship between the concept of risk and return and will be able to relate its implication on creating portfolio.
CO4	The student will be able to learn the theoretical concepts of underlying the portfolio creation
CO5	The student will be able to assess the tools and strategies for portfolio creation and evaluation and will also be able to evaluate the portfolios of mutual funds by using the tools of portfolio evaluation
Course Name	FM2: PROJECT APPRAISAL AND FINANCE
CO1	The student will be able to assess capital budgeting decisions under uncertain and risk bearing situation and will also be able to build and interpret the decision tree approach for decision making

CO2	The student will be able to choose between acquisition of long term assets either through lease or financing methods and will also be able to learn process of Private Equity and Venture Capital
CO3	The student will be able to compare the various theories of capital structure and will be able to determine the impact of debt equity mix on value of firm
CO4	The student will be able to evaluate and compare the pre and post merger financial position of the firms.
CO5	The student will be able to determine/ estimate the cash requirement in a firm and will also be able to evaluate the impact of trade receivable policy of a firm on its profitability.
Course Name	FM3: FINANCIAL DERIVATIVES
CO1	The student will be able to describe the concepts of derivatives and its trading and settlement procedures
CO2	The student will be able to calculate the value of Futures and apply it for risk managed trading strategies.
CO3	The student will be able to compute the value of Options and plan various option strategies.
CO4	The student will be able to analyse and use the concept of Swaps and will also be able to make Swaps related decisions.
CO5	The student will be able to relate concept of foreign exchange in currency conversion and apply currency forward rate agreements for hedging.
Course Name	HRM1: MANPOWER PLANNING, RECRUITMENT AND SELECTION
CO1	Students should be able to explain the factors affecting HRP and HRP process of an organisation.
CO2	Students should be able to determine the process of demand and supply forecasting while doing human resource planning.
CO3	Students should be able to devise the manpower plan for an organisation.
CO4	Students should be able to formulate Recruitment and Selection process on the basis of HRP.

CO5	Students should be able to outline the Recent Trends in Manpower Development and Planning
HRM2: PERFORMANCE MEASUREMENT SYSTEM	
CO1	Students should be able to distinguish the concept of Performance appraisal & Performance Management and also should be able to establish relationship of performance management with Strategic Planning.
CO2	Students should be able to determine the Mechanism of Performance Management, and also explain the various steps in performance planning and performance execution
CO3	Students should be able to justify the use of various modern and traditional methods of Performance Appraisal under given situation.
CO4	Students should be able to justify the use of various Performance Assessment Models under given situations; also the student should be able to determine the steps of giving a constructive feedback
CO5	Students should be able to discuss the importance and Principles of ethics in performance management.
Course Name	HRM3: COMPENSATION AND BENEFITS MANAGEMENT
CO1	Students should be able to compare the applicability of various Job Evaluation methods under given situations.
CO2	Students should be able to determine the importance of Wage Differentials and Differentiate between different types of wages
CO3	Students should be able to align the compensation strategy with business strategy
CO4	Students should be able to design and develop the incentive and benefits plans
CO5	Students should be able to outline the various Statutory Provisions related to Compensation

Course Name	OM1: LOGISTICS AND SUPPLY CHAIN MANAGEMENT
CO1	At the end of the course the student will be able to analyze the business requirement and apply supply chain strategies
CO2	The student will be able to design effective distribution network for a company.
CO3	The student shall be able to reduce transportation costs by applying optimization techniques.
CO4	The student shall be able to map the supply chain requirement as per the resources available by identifying the non value added services within the supply chain.
CO5	The student will be able to measure the performance of the supply by applying various metrics in different areas
Course Name	OM2: QUALITY TOOLKIT FOR MANAGERS
CO1	The student will be able to analyze the dimensions of Quality and apply quality systems for effective quality improvement.
CO2	The student will be able to select appropriate statistical tools for quality analysis.
CO3	The student will be able to recommend appropriate SPC tools to improve process quality.
CO4	The student will be able to set bench marks for the organization and apply TQM tools for quality improvement.
CO5	The student will be able to apply productivity tools for improving efficiency in the plant.
Course Name	OM3: OPERATIONS RESEARCH
CO1	The students will be able to attempt operation related problems by suggesting various operation research tools.
CO2	The students will be able to analyze LPP and Game Problems and find solutions for business decisions.

CO3	The students will be able to analyze and evaluate assignment problems to find solutions.
CO4	The students will be able to analyze and evaluate Transportation problems to optimize costs.
CO5	The students will be able to apply PERT/ CPM tools for optimizing time and cost in project management.
Course Name	BA1: DATA VISUALIZATION FOR MANAGERS
CO1	The student will be able to identify and use Interactive data visualization software desktop tools and will also be able to create Interactive data visualization software desktop workspace
CO2	The student will be able to connect data and will also be able to use Interactive data visualization software's File Types effectively.
CO3	The student will be able to create analytics pane and will also be able to use Sort, Filters, Sets, Groups and Hierarchy functions
CO4	The student will be able to create calculations to enhance the data visualisation
CO5	The student will be able to build effective dashboard
Course Name	BA2: DATA MINING
CO1	Given overview of Data Mining and Data pre-processing, the future manager will be able to outline major research challenges of data mining, Kinds of data and applications, Data Cleaning; Data Integration; Data Reduction; Data Transformation and Data Discretization.
CO2	Given the overview of Data Warehousing, the future manager will be able to classify the Concept of Data Warehousing using Data Cube and OLAP and also able to identify the process of Data Generalisation
CO3	Given the details pertaining to Pattern Mining, the future manager will be able to evaluate Patterns using colossal patterns, mining compressed or approximate patterns; explore patterns and its applications.

CO4	Given the details pertaining to Pattern Mining, the future manager will be able to analyse clusters using partitioning method, hierarchical method, density based method and grid based method
CO5	Given the details pertaining to Pattern Mining, the future manager will be able to correlate the use of data mining to the society and also will be able to explain the trend in data mining.
Course Name	BA3: DATA SCIENCE USING R
CO1	Given overview of types of Data, the future manager will be able to read data from different files and create matrices and data frames using R
CO2	Given the overview of functions, subset and loop; the future manager will be able to explain the character functions, date function, package, control statement and do loop.
CO3	Given the basic statistical data, the future manager will be able to draw charts, histogram and plots, and measure central tendencies.
CO4	Given the data for testing of hypothesis, the future manager will be able to test the hypothesis by applying t-test, ANOVA and Chi-square test
CO5	Given the data of variables, the future manager will be able to apply Linear Regression, Logistic regression, Cluster Analysis, Time Series, Decision Tree and Random Forest
Course Name	ED1: ENTREPRENEURIAL THEORY AND PRACTICES
CO1	On completion of module, the student will be able understand the concept of entrepreneurship and what entrepreneurs do. They will also be able to relate the work of few prominent Indian entrepreneurs with the learned concept and compare the work of a manager with that of an
CO2	On completing this module, the student will learn how entrepreneurship evolved from its earlier disorganized form to the current Government supported form. They will also be able to justify the role of EDPs in growth of entrepreneurship.

CO3	Upon studying this module, the students will be able to explain the theories of entrepreneurship and also how the entrepreneurial knowledge gained can be applied to developing entrepreneurial ventures in different economic sectors in India.
CO4	On properly studying this module, the student will be able to examine the impact of different financial aspects on entrepreneurship and can evaluate his/her own ability to set up a small scale venture.
CO5	On studying this module, the student will be able to create a mental map of the network of Government support system and various institutions purposely designed and set up, at national, state and district level, for assisting entrepreneurial ventures.
Course Name	ED2: BUSINESS PLAN FORMULATION
CO1	On completion of module, the student will be able understand the concept and importance of a business plan in entrepreneurship. They will also be able to explain the elements of a good business plan, in order to be effective.
CO2	On studying this module, the students will be able to classify projects into categories and will also be able to formulate a basic business plan (project).
CO3	Upon going through this module, students will be in a position to understand how to develop ideas for a business project. They will also be able to assess the role of environment on different economic sectors and opportunities in India.
CO4	On properly studying this module, the student will be able to examine the importance of project appraisal and can evaluate the different parameters that contribute to feasibility of a business project.
CO5	Detailed study of this module will enable students to formulate steps in starting a small enterprise and visualise a model of small business. They will be able to relate the project to various permissions required for entrepreneurial ventures.
Course Name	ED3: SOCIAL ENTREPRENEURSHIP
CO1	Under given circumstances the Learner shall identify the motivating factors and success factors of a Social enterprise.

CO2	In context of the Indian Society, the learner shall enlist the socio economic challenges and identify the Opportunities for creation of a Social
CO3	Under exemplified conditions the Learner shall be able to discover the business models of Social Entrepreneurship.
CO4	Under different circumstances the learner will be able to select an appropriate form of Social enterprise.
CO5	Given the case the learner shall be able to interpret the business model and illustrate the reasons for success of a social enterprise.
Course Name	IB1: INTERNATIONAL MARKETING MANAGEMENT
CO1	At the end of the course the student shall be able to differentiate between domestic marketing and international marketing and understand clearly features of International Marketing.
CO2	At the end of the course the student shall be able to plan, explain and practice various procedures in International marketing.
CO3	At the end of the course the student manager shall be able to design and develop Global Product Policy decisions.
CO4	At the end of the course the student manager shall be able to design/develop strategies for International Service Sector Marketing
CO5	At the end of the course the student manager shall be able to design/develop functional level strategies for Global Branding.
Course	IB2: EXPORT DOCUMENTATION AND PROCEDURES
CO1	Students should be able to understand various preliminaries for exports and IEC codes and should be able to analyze functions of export marketing organizations and trading houses.
CO2	Students should be able to understand various preliminaries of importand should be able to perceive concepts involved in import documentation and procedures.

CO3	Students should be able to relate the concepts with selection of products and markets for exports as well as examine the pricing and payment methods in exports
CO4	Students should be able to understand and elaborate various concepts in Export documentation, export procedures and contracts.
CO5	Students should be able to perceive the procedures and intricacies of excise clearance and should be able to understand various shipment and post-shipment formalities
Course Name	IB3: INTERNATIONAL FINANCE
CO1	Students Should be able to perceive various concepts involved in International Monetary system and various concepts like international liquidity and SDR
CO2	Students should be able to understand methods of exchange rate determination , understand working of foreign exchange market and relate these concepts with existing scenario in India
CO3	Students should be able to understand and analyze currency contracts and options. They should be able to examine risks involved in foreign trade and ways to manage the risks.
CO4	Students should be able to understand management of short term finance in Multinational corporations and international financing decisions including funding and borrowing decisions
CO5	Students should be able to understand and analyze various concepts like BOP, transfer pricing , structure of International banking and standards of international accounting
Course Name	SUMMER INTERNSHIP PROJECT (SPECIALIZATION BASED)
CO1	Student is able to construct the company profile by compiling the brief history, management structure, products / services offered, key achievements and market performance for his / her organization of internship.
CO2	For his / her organization of internship, the student is able to assess its Strengths, Weaknesses, Opportunities and Threats (SWOT). Student is able to determine the challenges and future potential for his / her internship organization in particular and the sector in general.

CO3	Student is able to test the theoretical learning in practical situations by accomplishing the tasks assigned during the internship period.
CO4	Student is able to apply various soft skills such as time management, positive attitude and communication skills during performance of the tasks assigned in internship organization.
CO5	Student is able to analyze the functioning of internship organization and recommend changes for improvement in processes.
Course Name	STRATEGIC MANAGEMENT
CO1	The student will be able to evaluate alternative paradigms of strategy and their influence on strategic decision making.
CO2	The student will be able to analyse and develop the vision and mission statement for given organisations and will also be able to differentiate between the external and internal components of environment while performing SWOT analysis.
CO3	The student will be able to design and develop corporate level strategies for any organization.
CO4	The student will be able to design/develop business level strategies for any organization.
CO5	The student will be able to evaluate all levels strategies and will also be design/develop functional level strategies for any organization.

MBA CBCS (Sem-IV)

Course Name	MM4: RETAIL SALES MANAGEMENT AND SERVICES MARKETING
CO1	On completion of this module the students will be able to utilise the knowledge gained on Retail Industry and the existing retail environment. The student will also be able to plan their retail business as future manager by applying retail segmentation.
CO2	On completing this module, the students will be able to take part in the decisions involved in running a retail firm. They will also be able to form their own opinion on various retail formats and recommend strategies for retail planning.
CO3	On completing this module, the students will be able to draw relationship between retail merchandising, marketing communication, CRM and retail success. They will also be in a position to predict impact of changing trends in Indian market scenario on retail business.
CO4	On completion of this module, the students will be able to analyse concepts, functions, and techniques of the craft of service marketing services and will also be able to identify critical issues in service design & delivery. As future managers they will also be able to adapt a particular model of service marketing to a firm they work with.
CO5	On completing this module, the students will be able to examine the application of integrated marketing communication (IMC) to retail business and develop an effective service marketing system for retail business. Students will also be in a position to recommend ethical rules for conduct of retail business in India.
Course Name	FM4: MANAGING BANKS AND FINANCIAL INSTITUTIONS
CO1	The student will be able to identify role of banking in economic development of country.
CO2	The student will be able to assess the impact of monetary policy and its instruments on banking sector
CO3	The student will be able to analyse the health and risk of bank balance sheet and will also be able to appraise credit management parameters of a bank
CO4	The student will be able to identify the NPAs and will also be able to appraise the process of securitisation.

CO5	The student will be able to distinguish the utility of various non banking institutions like insurance, housing finance and credit rating
Course Name	HRM4: TEAM DYNAMICS
CO1	Students should be able to justify the applicability of various theories of Motivation in given situation and appraise the role of motivation in Team Behavior
CO2	Students should be able to determine the importance of Interpersonal Communication and application of FIRO-B and Johari Window.
CO3	Student should be able to explain the various steps of Group Formation and types of team
CO4	In a given situation, Students should be able to justify the Conflict resolution strategy.
CO5	Students should be able to apply various OD Intervention tools under given situation.
Course Name	OM4: SALES AND OPERATIONS PLANNING
CO1	At the end of the course the student will be able to develop short term, medium term and long term forecasting needs in the organization.
CO2	The student will be able to apply forecasting models for forecasting.
CO3	The student will be able to develop aggregate planning by applying aggregate strategies.
CO4	The student will be able to plan MPS and calculate bill of materials and MRP for production plan.
CO5	The students will be able to plan distribution of finished goods taking into consideration various inputs and constraints.

Course Name	BA4: WEB AND SOCIAL MEDIA ANALYTICS
CO1	The student will be able to choose theright tools for website design for measured outcomes.
CO2	The student will be able to construct a modern metrics of better performance from eight specific metrics for web performance.
CO3	The student will be able to develop a model for moving quickly from data to actions on a particular website.
CO4	The student will be able to develop themodel for measuring the success of a Mobile & Social Media Campaign..
CO5	The student will be able to develop a model for the website Outcome.
Course Name	ED4: ENTREPRENEURIAL MARKETING
CO1	The student will be able to interpret the micro and macro environment of the firm
CO2	The student will be able to use entrepreneurial approaches to marketing functions.
CO3	The student will be able to describe consumer buying decision process
CO4	The student will be able to justify the franchising mechanism as a tool for entrepreneurial marketing
CO5	The student will be able to justify and elaborate the tools of relationship marketing
Course Name	IB4: INTERNATIONAL HUMAN RESOURCE MANAGEMENT
CO1	Students will be able to differentiate between international and domestic HRM and analyze issues in IHRM and competencies of international managers
CO2	Students will be able to understand recruitment and selection process for expatriates and various concepts involved in it such as HR outsourcing
CO3	Students will be able to perceive concepts involved in training and development of expatriates and concepts such as diversity training and cross cultural team building.

CO4	Students will be able to understand and examine various international performance management processes and compensation of expatriates
CO5	Students will be able to understand and analyze various cultural dimensions, cultural sensitivity as well as should be able to elaborate collective bargaining and employee relations in various countries.
Course Name	PROJECT WORK AND VIVA VOCE
CO1	In a specialization domain of his / her choice, student manager will be able to choose an appropriate topic for study and will be able to clearly formulate & state a research problem
CO2	For a selected research topic, student manager will be able to compile the relevant literature and frame hypotheses for research as applicable
CO3	For a selected research topic, student manager will be able to plan a research design including the sampling, observational, statistical and operational designs if any
CO4	For a selected research topic, student manager will be able to compile relevant data, interpret & analyze it and test the hypotheses wherever applicable
CO5	Based on the analysis and interpretation of the data collected, student manager will be able to arrive at logical conclusions and propose suitable recommendations on the research problem
CO6	Student manager will be able to create a logically coherent project report and will be able to defend his / her work in front of a panel of examiners
Course	EXIT SEMINAR AND OPEN DEFENCE
CO1	The student will be able to apply knowledge of management theories and practices to solve business problems
CO2	The student will Foster Analytical and Critical thinking abilities for data-based decision making

CO3	The student will acquire Ability to develop Value Based Leadership ability
CO4	The student will develop the Ability to understand, analyse and communicate global, economic, legal, and ethical areas of business
CO5	The student will acquire the Ability to lead themselves and others in the achievement of organizational goals, contributing effectively to a team environment.


HOD
Master of Business Administration
Madhukarrao Pandav College Of
Engineering, Bhandara

**Madhukarrao Pandav College Of Engineering Bhilewada,
Bhandara**

Course Outcome

Department of Civil Engineering

3rd Semester
Course Outcome

Subject:	Applied Mathematics- III
Code:	BECVE301T
Sr.No.	Course Outcomes
1	Apply Fourier series in the analysis of periodic functions not in terms sine and cosine encountered in engineering problem.
2	Solve Partial differential equations of first, higher and second order using elementary techniques formulate mathematical models to simple problems of vibration of strings and beams in terms of Partial differential equations and solving with elementary solution technique
3	Learn the concept of finding maxima and minima of definite integral involving unknown function and its derivatives
4	Learn to find an approximate solution of algebraic and transcendental equations, system of linear equations and first order ordinary differential equations by various numerical methods

5	Formulate simple optimization problem and learn to solve it by Graphical method and Simplex method
6	Formulate simple optimization problem and learn to solve it by Graphical method and Simplex method

Subject:	STRENGTH OF MATERIALS
Code:	BECVE302T
Sr.No.	Course Outcomes
1	Demonstrate the behavior of materials under different stress and strain conditions
2	Construct & draw shear force and bending moment diagram for beams under loading conditions.

3	Analyze the bending stress, shear stress on simple and composite beams.
4	Assess the stresses due to torsion on different geometrical sections
5	Estimate the deflection of beam under different loading conditions.
6	Analyze the state of stresses in two dimensions.

Subject:	STRENGTH OF MATERIALS (P)
Code:	BECVE302P
Sr.No.	Course Outcomes

1	The students would be able to understand the actual behaviour of material and its properties
2	The students would be able to understand the compressibility of the material by testing
3	The students would be able to understand the rigidity and flexibility of the material by testing

Subject:	ENVIRONMENTAL ENGINEERING – I
Code:	BECVE303T
Sr.No.	Course Outcomes
1	The students would be able to understand the importance and necessity of water supply.

2	The students would be able to determine the capacity of water supply scheme
3	The students would have the basic knowledge related to the conveyance systems and the appurtenances used.
4	The students would have knowledge of characteristics of water, drinking water standards and necessity of treatment.
5	The students would be able to design various units of conventional water treatment plant.
6	The students will learn about Municipal Solid Waste Management.

Subject:	PRACTICAL ENVIRONMENTAL ENGINEERING – I
Code:	BECVE303P

Sr.No.	Course Outcomes
1	The students would have knowledge of characteristics of water, drinking water standards and necessity of treatment.
2	The students would have knowledge of proper doses of chlorine in water.
3	Students come to know detail knowledge of physical properties of water

Subject:	ENGINEERING GEOLOGY
Code:	BECVE304T

Sr.No.	Course Outcomes
1	Understand scope of engineering geology and identify different types of rocks, minerals and building stones.
2	Understand geological concepts and approaches of weathering of rocks
3	Understand the structural geology terms like dip, strike, joints and learn about earthquake.
4	Define the basic terms related to the earthquake and assess the safety civil engineering structures in different seismic zones.
5	Know importance of geo-hydrological and geo-physical information of area in planning the civil engineering structure.
6	Understand Engineering Properties of rocks and Civil Engineering works

Subject:	ENGINEERING GEOLOGY (P)
Code:	BECVE304P
Sr.No.	Course Outcomes
1	Students come to know about the strength of rocks
2	Students come to know about the types of rock and rock cycle

Subject:	CONCRETE TECHNOLOGY
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Code:	BECVE305T
Sr.No.	Course Outcomes
1	The students would be able to check and recommend different constituent of concrete.
2	The students would be able to control method of manufacture of concrete.
3	The students would be able to test strength and quality of plastic and set concrete.
4	The students would be able to understand the effect of process of manufacturing on different properties of concrete
5	The students would be able to understand various environmental factors which affect durability of concrete, analyze cause of deterioration of concrete components and to suggest various preventive measures to it
6	The students would be able to understand the effects and properties of concrete.

**Madhukarrao Pandav College Of Engineering Bhilewada,
Bhandara
Course Outcome**

Department of civil Engineering

4th Semester Course Outcome

Subject:	STRUCTURAL ANALYSIS – I
Code:	BECVE 401 T
Sr.No.	Course Outcome
1	The student would be able to apply knowledge to analyze concept of deflection, bending moment and shear force diagram in beams under various loading conditions using different analysis methods
2	The student would be able to apply knowledge to analyze concept of deflection trusses and columns under various loading conditions using different analysis methods
3	The student would be able to apply knowledge to determine forces in determinate and indeterminate structures by the force method
4	The students would be able to perform ILD analysis of determinate beams and trusses.

5	The student would be able to apply knowledge to determine forces in determinate and indeterminate structures by the matrix method
6	The students would be able to perform column analogy method

Subject:	STRUCTURAL ANALYSIS – I (P)
Code:	BECVE 401 P
Sr.No.	Course Outcomes
1	Apply the knowledge of different methods of analysis of structures to analyze the structural elements
2	Apply the knowledge obtained in theorems & principles of analysis of structure and verifies the same experimentally

3	Know the working principle and use of Strain gauges and Polari-scope in structural analysis
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Subject:	GEOTECHNICAL ENGINEERING-I
Code:	BECVE 402 T
Sr.No.	Course Outcome
1	Explain the origin of soil and identify different types of soil.
2	Evaluate the index and engineering properties of the soil

3	Apply the knowledge of soil properties in determining the suitability of foundation for a particular type of soil
4	Examine the seepage and permeability of soil and classify its suitability in various engineering works
5	Evaluate the shear stresses and strength of the soil mass
6	Explain direct shear test, triaxial test, unconfined compression test, vane shear test, sensitivity.

Subject:	GEOTECHNICAL ENGINEERING - I
Code:	BECVE 402 P
Sr.No.	Course Outcome
1	Identify and classify the soil based on engineering properties of soil.

2	Determine the density and shear strength parameters of soil of a soil using various tests
3	Use different charts for classifying soil or knowing the stress under the soil

Subject:	TRANSPORTATION ENGINEERING – I
Code:	BECVE 403 T
Sr.No.	Course Outcome
1	A person with broad vision and complete knowledge of design and construction practices in highway engineering and pavement.

2	The student will be able to test highway materials and draw appropriate conclusion
3	The student will be able to maintain and propose measurement
4	The student will be able to undertake Traffic studies
5	Explain different sub-structures and super-structures of a bridge and its construction, inspection and maintenance.
6	Students will be able to Methods & Techniques of rating of existing bridges Inspection, Repairs, maintenance, corrosion-causes and prevention, Aesthetics.

Subject:	TRANSPORTATION ENGINEERING - I
Code:	BECVE 403 P

Sr.No.	Course Outcome
1	Evaluate the strength parameters of sub-grade soil through various tests
2	Examine different physical and engineering properties of aggregates & assess its suitability for different types of roads
3	Determine the various properties of bitumen by assess its suitability for different types of roads

Subject:	SURVEYING – I
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Code:	BECVE 404 T
Sr.No.	Course Outcome
1	The students would be able to do temporary and permanent adjustments.
2	The students would be able to measure distances and angles
3	The students would be able to orient and draw the various maps
4	The students would be able to calculate areas and volumes of the Civil Engg. Work
5	The student would be able to undertake various civil engineering surveys work
6	Make use of knowledge regarding various survey instruments in measuring the distances and angles and also to compute levels of different works.

Subject:	SURVEYING – I (P)
Code:	BECVE 404 P
Sr.No.	Course Outcome
1	Exhibit the knowledge of working and uses of various survey instruments
2	Take the measurement, record the measurement and perform the calculations by applying necessary adjustments
3	Collect the surveyed data and to compute the area of traverse using various instruments

Subject:	BUILDING CONSTRUCTION & MATERIAL
Code:	BECVE 405 T
Sr.No.	Course Outcome
1	The students are able to identify components of a building. Identify sub-structure and super-structural components of a building and illustrate the basic design of foundation.
2	The students are able to differentiate and identify types of building materials.
3	The students are able to select appropriate material for building construction
4	Select, plan and provide the suitable types doors and window at appropriate locations
5	Demonstrate the knowledge of the requirement of various building components and take up the planning, design and construction related activities with their quality control.
6	The students are able to plan various construction related activities and their quality control.

Subject:	COMPUTER APPLICATIONS IN CIVIL ENGINEERING
Code:	BECVE 406 P
Sr.No.	Course Outcome
1	The student would be able to analyze, identify and define computing requirement for engineering problems
2	The student would be able to develop and execute computer program for solving mathematical and engineering problems.
3	The student would be able to deal with various types of solution errors occurred during cyclic computations
4	The student would be able to develop tool for solving various engineering problems

5	<p>The student would be able to work as an effective team member or team leader to accomplish common goal.</p> <p>The students would be able to debug the program for common errors.</p>
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Madhukarrao Pandav College Of Engineering Bhilewada, Bhandara

Course Outcome

Department of Civil Engineering

5th Semester

Course Outcome

Subject	STRUCTURAL ANALYSIS –II
code	BECVE501T
Sr No.	COURSE OUTCOMES
1	Apply the different methods of analysis of frames in practical problems
2	Formulation of stiffness matrix, transformation matrix, load matrix for various structural components for analysis purposes.

3	Understand the basics of finite element method in the analysis of structural components.
4	Understand the concepts related to structural dynamics.
5	Apply knowledge of Direct Stiffness Method to formulate Stiffness Matrix, Transformation Matrix, Load Matrix to analyse Plane Truss
6	Analysing DOF by Flexibility Method and Column Analogy Method

Subject	STRUCTURAL ANALYSIS –II
code	BECVE501P
Sr No.	COURSE OUTCOMES
1	Analysis and design different structural components using application software

2	Apply the concepts of stiffness matrix for the evaluation of displacement, moments etc.
3	Adapt the appropriate method to develop the solution to engineering problems using software and modern tools.

Subject	REINFORCED CEMENT CONCRETE (RCC) STRUCTURES
code	BECVE502T
Sr No.	COURSE OUTCOMES
1	Understand the basic concepts of structural design Methods of RCC to the practical problem.

2	Understand the composite action of reinforced steel and concrete in reinforced concrete structural members
3	Use the knowledge of the structural properties of materials i.e. steel and concrete in assessing the strength.
4	Use the knowledge in structural planning and design of various components of buildings.
5	Apply the concepts and applications of prestressed concrete in real problems
6	Exhibit the knowledge of design of one-way & two – way slab using appropriate method

Subject	REINFORCED CEMENT CONCRETE (RCC) STRUCTURES
code	BECVE502P

Sr No.	COURSE OUTCOMES
1	Apply the knowledge in actual structural design for various buildings.
2	Make use of structural design knowledge in reading and understanding the professional RCC

Subject	Fluid Mechanics-I
code	BECVE503T
Sr No.	COURSE OUTCOMES
1	Measure and determine fluid pressures and forces on plates/surfaces, pipe bends, etc.

2	Apply the Bernoulli's equation to solve the problems in fluid.
3	Understand the concepts of dimensional analysis use the dimensionless number suitably.
4	Understand the basic concepts related to laminar and turbulent flow.
5	Apply the principles of hydrostatics and determine the forces.
6	Exhibit the knowledge of dimensional analysis and use of dimensionless number suitably model analysis.

Subject	FLUID MECHANICS-I
code	BECVE503P
Sr No.	COURSE OUTCOMES

1	Determine the discharge of Venturimeter , Orifice meter, Rectangular Notch, Triangular Notch
2	Estimate the coefficient of velocity and the coefficient of contraction of the orifice and mouth piece
3	Assess and interpret the condition of laminar flow, turbulent flow & Reynolds number

Subject	Geotechnical Engineering -II
code	BECVE504T
Sr No.	COURSE OUTCOMES
1	Use the knowledge of different soil exploration techniques to ascertain the properties of soil

2	To analyze the stability of natural slopes, safety & sustainability of the slopes, design of retaining structures, reinforced earth walls, etc.
3	Practice Ground Improvement Techniques.
4	Design the shallow & deep foundation
5	Apply the knowledge in evaluating various parameters like bearing capacity, settlement of foundation, shear failure, etc and implement in the design of foundation
6	Illustrate different types of pile with their constructional features and demonstrate the knowledge in evaluating the pile capacity

Subject	HYDROLOGY AND WATER RESOURCES
code	BECVE505T

Sr No.	COURSE OUTCOMES
1	Use of knowledge of basics of hydrology in calculating infiltration, evaporation, total runoff.
2	Use the techniques of the Hydrographs to forecast flood discharge at various durations.
3	Apply the Statistical techniques to analyze the flood occurrence & frequency.
4	Use the knowledge pertaining to the flood to plan flood routine & emergency plans
5	Apply the knowledge of geo-hydrology terms in planning, assessing & computation of ground water potential and its assessment using various techniques.
6	Take-up planning of water resources mini project

Subject	Communicative English & Technical Writing
code	BECVE506P
Sr No.	COURSE OUTCOMES
1	Exhibit the practice of functional grammar
2	Write at work, letters, draft reports and demonstrate the understanding of writing research proposal.
3	Dexterous in presentation skills and participate in discussio

Madhukarrao Pandav College Of Engineering Bhilewada, Bhandara
Course Outcome
Department of Civil Engineering
6th Semester
Course Outcome

Subject	STEEL STRUCTURES
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code	BECVE601T
Sr No.	Course Outcomes
1	Use the knowledge of structural properties in assessing its strength for the construction purpose
2	Apply the knowledge of various techniques in analyzing the steel structural components
3	Make use of knowledge of analysis in structural planning and design of various components of buildings
4	Interpret the strength & properties of structural fasteners and extend the knowledge in design of connections and joints.
5	Demonstrate the knowledge in design of beams and girders
6	Exhibit the knowledge of design of different types column

Subject	STEEL STRUCTURES
code	BECVE601P
Sr No.	Course Outcomes
1	Calculate axially loaded member by tensions and compression members
2	Design the connection: Beam to beam, beam to column
3	Design of column & its components

Subject	SURVEYING-II
code	BECVE602T

Sr No.	Course Outcomes
1	Carry forward the concepts of basic surveying techniques
2	Operate various survey instruments effectively with precision
3	Use different types of techniques in various surveying problems
4	Apply the concepts of modern surveying techniques & instrumentation
5	Take - up mini project using different surveying techniques
6	Adapt various photography surveys in drawing appropriate conclusion.

Subject	SURVEYING-II
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code	BECVE602P
Sr No.	Course Outcomes
1	Acquire the knowledge of errors and precisions during the survey work
2	Handle & record measurement on instruments used in various types of surveying
3	Carry out detailed survey of an area using appropriate technique and draw topological features on the sheet

Subject	FLUID MECHANICS –II
code	BECVE603T
Sr No.	Course Outcomes

1	Understand the concepts related to boundary layer theory and determination of drag and lift forces.
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.
3	Use the concepts of uniform and critical flow through open channels including design of efficient channel sections
4	Understand the different techniques of dimensional analysis and its use in model testing.
5	Understand and apply basics related to Turbines & Pumps in Water Resources planning.
6	Make use of specific energy concepts in the analysis of open channel flow.

Subject	FLUID MECHANICS –II
code	BECVE603P

Sr No.	Course Outcome
1	Verify basic terminology related to fluid mechanics.
2	Evaluate various hydraulic parameters for an open channel flow.
3	Explain the working and operation of turbines and pumps.

Subject	BUILDING DESIGN & DRAWING
code	BECVE604P
Sr No.	Course Outcome
1	Understand building bye laws & building code

2	Apply the principles of building planning and design.
3	To draw submission/working drawing using suitable software.
4	Make use of knowledge to give layout on the field as per the plan
5	To draw simple perspective drawings.
6	Understand Drawings and Detailing of Building services

Subject	ENVIRONMENTAL ENGINEERING-II
code	BECVE605T
Sr No.	Course Outcome

1	Use the concept related to water & its quality, sewage, sewer, storm water, etc in its hydraulic design
2	Apply the knowledge of different components of sewer in construction, testing & maintenance of sewers
3	To test the sample of waste water in the laboratory for physical & chemical characteristics.
4	Take-up functional planning, layout and design of water treatment plant components.
5	Take-up functional planning, layout and design of sewage treatment plant components.
6	Plan for rural sanitation provisions, perform functional design of septic tank

Subject	SITE VISITS & MINI PROJECT
code	BECVE606P

Sr No.	Course Outcome
1	Get an idea of various project details such as contracts, layout, planning, drawing, estimates, Arbitration provision, licensee & licensor, architects, structural designer, etc.
2	Get an idea of various construction equipment, manpower & techniques used at site, techniques of batching, mixing, transportation, and placement of different construction materials
3	Get an overview on safety measures, basic amenities to provide, inventory control
4	Write a legible, correct and technically sound report after the visit.
5	Ascertain the provisions and execution as per the working drawing

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Course Outcome

Department of Civil Engineering

7th Semester

Course Outcome

Subject	ADVANCED CONCRETE STRUCTURES
Code :	BECVE701T
Sr.No	Course Outcome
1	Apply the knowledge in design of different types of water tanks using appropriate method. different concrete members
2	Exhibit the knowledge of design of columns & footings subjected to various loading and conditions using appropriate method.
3	Make use of knowledge in analysis design of beams for various condition.
4	Demonstrate the knowledge of analysis and design of different types of retaining wall.
5	Acquire the knowledge of design of different types portal frame and staircase.
6	Demonstrate the knowledge of design of different types of footing.

Subject	ESTIMATING AND COSTING
Code :	BECVE702T
Sr.No	Course Outcome
1	Prepare the preliminary estimate for administrative approval & technical sanction for a civil engineering project.
2	Write the specification of the works to be undertaken, prepare the tender documents, fill the contracts and make use of knowledge of different contract submission & opening in awarding the work to the contractor
3	Use the concept of SD, EMD, MAS, Running Bill, Final Bill during the entire project
4	Schedule the project for its timely completion.
5	Use the technique of Rate analysis in estimating the exact cost of material & manpower and hence the entire project.

6	Estimate the bill of quantities using different techniques of preliminary & detailed estimation of buildings & roads
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Subject	ADVANCED TRAFFIC ENGINEERING (ELECTIVE-I)
Code :	BECVE703T
Sr.No	Course Outcome
1	Use the knowledge to carry out traffic studies and give solutions to planning of transportation system.
2	Apply basic principles for the geometric design of roads and other traffic controlling devices
3	To understand the parking systems, riding quality standards, traffic safety and accident study and suggest the solutions to the practical problems.

Subject	AIR POLLUTION AND SOLID WASTE MANAGEMENT (ELECTIVE-I)
Code :	BECVE703T
Sr.No	Course Outcome
1	Understand different aspects of air pollutants, its sources and effects on man and material etc.
2	Design controls methods and equipments for air pollution to reduce its impact on environment.
3	Understand problems arriving in handling large amount of solid waste generated ,its collection and transportation, processing and will bw able to design safe collection and disposal methods.
4	Acquire the knowledge of appropriate methods and equipments available to reduce the impact of air pollution on environment.
5	Assess the physical and chemical characteristics of the solid waste depending upon its sources of generation.
6	Demonstrate the knowledge of different methods of processing of solid waste and control of its by-products

Subject	CONSTRUCTION MANAGEMENT & LAW
Code :	BECVE704T
Sr.No	Course Outcome
1	Demonstrate the understanding of various types of projects, modern construction techniques and will exhibit the mastery in construction planning, scheduling and various controls.
2	Achieve the knowledge of various types' of equipments to be used in the construction and its operational cost estimates, understand manpower requirement, planning, resources utilization and management.
3	To know the quality control aspects in planning & management, modern trends project management, application of information system in management of construction projects, safety provisions and equipments.
4	Analyze 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.
5	Understand the provisions of different Acts pertaining to The Environment, Forest, water & Air Pollution for any construction activity to be undertaken.

6	Make use of the knowledge of 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.
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Subject	TRANSPORTATION ENGINEERING-II
Code :	BECVE705T
Sr.No	Course Outcome
1	Understand the functions of various elements of railways, airports, tunnels and docks and harbor.
2	Plan and design various elements of railways, airports, tunnels and docks and harbor.
3	Understand the various principles traffic control in railways, airports, tunnels and docks and harbor
4	Understand layout, design and construction permanent way, runway, taxiways, tunnels, births and jetty.

5	Understand the maintenance of various elements of railways, airports, tunnels and docks and harbor.
6	Exhibit the knowledge in tunnel survey, drainage, lighting and ventilation.

Subject	TRANSPORTATION ENGINEERING-II
Code :	BECVE705P
Sr.No	Course Outcome
1	Understand the functions of various elements of railways, airports, tunnels and docks and harbor
2	Plan and design various elements of railways, airports, tunnels and docks and harbor
3	Understand the various principles traffic control in railways, airports, tunnels and docks and harbor.

4	Understand layout, design and construction permanent way, runway, taxiways, tunnels, births and jetty
5	Understand the maintenance of various elements of railways, airports, tunnels and docks and harbor

Subject	INDUSTRIAL CASE STUDY & PROJECT SEMINAR
Code :	BECVE706P
Sr.No	Course Outcomes
1	Acquire the Civil Engineering knowledge from the industry, learn the practical aspect of the same & write detailed report on it.
2	Demonstrate the knowledge of reviewing the literature available and formulate the Aim and Objective of the project based on the literature survey
3	Write the report and prepare the presentation and deliver the content of the work done in the project.

**Madhukarrao Pandav College Of Engineering Bhilewada,
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Course Outcome

Department of Civil Engineering

8th Semester

Course Outcome

Subject	IRRIGATION ENGINEERING
Code :	BECVE801T
Sr.No	Course Outcomes
1	Understand the importance and scope of irrigation engineering
2	Understand fully the methods and efficiencies of irrigation, crop water requirement.
3	Understand the planning, design and operation of storage reservoir and make use of it in the practical situation
4	Understand the basic profile of dams and use the knowledge in checking stability of Gravity dams and Earth dams
5	Understand the theories of Canal design and apply the concept to design lined and unlined canals and detail out the cross sections

6	Understand water logging and provide the solution to such problem
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Subject	Elective-II: PAVEMENT ANALYSIS AND DESIGN
Code :	BECVE802T
Sr.No	Course Outcomes
1	Analyze and Design pavement and under different loading conditions for highways and airfields taking into consideration different characteristics
2	Propose a pavement management system framework
3	Design highway appurtenance and highway drainage
4	Perform different tests considering field conditions and using the knowledge to increase the strength of pavements along with its economy point of view
5	Propose a framework for pavement management system.

6	Acquire the knowledge of pavement testing and evaluation and make use of it in strengthening, repairs, maintenance and rehabilitation of pavements.
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Subject	Elective-III: WATER AND WASTE WATER TREATMENT
Code :	BECVE803T
Sr.No	Course Outcome
1	Understand composition of typical municipal solid wastes, their sources, collection, treatment and disposal methods.
2	Attain an ability to use the techniques, skills, and modern engineering tools necessary for environmental engineering practices.
3	Designing of different units of water & waste water treatment plant.
4	Give the knowledge about recent development in water & waste water treatment .
5	Make use of the knowledge related to WTP in the design of different units of water & waste water treatment plant.

6	Acquire the knowledge of recent development in water & waste water treatment.
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Subject	Elective-III: WATER AND WASTE WATER TREATMENT
Code :	BECVE803P
Sr.No	Course Outcome
1	Evaluate various water and waste water parameter
2	Ascertain the presence of impurities so as to evaluate the quality of water.
3	Make use of the knowledge to design individual units of a WTP

Subject	Construction Economics and Finance
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Code :	BECVE804T
Sr.No	Course Outcome
1	Acquaint with various economic and financial aspects of construction industry
2	Understand the tools and techniques of economic analysis for improving their decision making skills
3	Understand the knowledge of economics and finance with special reference to construction industry
4	Understand the concept of IRR, turnkey construction projects
5	Apply knowledge of inflation, recession, financial ratios
6	Acquire the knowledge of terms related with capital cost, CIBIL, etc and extend the knowledge in calculating the working capital of civil engineering projects.

Subject	Project
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Code :	BECVE805P
Sr.No	Course Outcome
1	Have the knowledge of the collection and analysis of data related to project work and apply the knowledge in actual work of the project
2	Present the results obtained and write the inference of the results with scope of the work
3	Write the report and prepare the presentation and deliver the content of the work done in the project


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DEPARTMENT OF MECHANICAL ENGINEERING

B.E THIRD SEMESTER

COURSE OUTCOMES (CO'S)

Subject :	Applied Mathematics-III (Theory)
Code:	BEME301T
Sr. No.	Course Outcome
BEME301T.CO1	Apply Laplace Transform to solve ordinary differential equations, Integral equations and Integro- differential Equations.
BEME301T.CO2	Apply Fourier series in the analysis of periodic functions in terms sine and cosine encountered in engineering problems and Fourier Transform to solve integral equations.
BEME301T.CO3	Apply Calculus of Variation on First and Second order derivatives , boundary value problems.
BEME301T.CO4	Learn the concept of differentiating, integrating and expanding of analytic functions in complex numbers and their applications such as evaluation of integrals of complex functions

BEME301T.CO5	Solve partial differential equations of first order, higher order with constant coefficients and of second order using method of separation of variables.
BEME301T.CO6	Analyze real world scenarios to recognize when matrices are appropriate, formulate problems about the scenarios, creatively model these scenarios in order to solve the problems using multiple approaches

Subject :	KINEMATICS OF MACHINE (Theory)
Code:	BEME302T
Sr. No.	Course Outcome
BEME302T.CO1	To analyze the motions of mechanisms, design the mechanisms to give desired motions and to understand how to classify the four bar chain mechanisms.
BEME302T.CO2	To Analysis of mechanisms (Displacement, Velocity, Acceleration) by graphical & analytical method.
BEME302T.CO3	Synthesis of cam for different follower motion with basic concept on cam mechanisms.
BEME302T.CO4	To Understand the motion transmitted by toothed wheels & its terminology.

BEME302T.CO5	Contrive or synthesize new mechanisms for specific requirements and Perform computer aided analysis of simple mechanisms.
BEME302T.CO6	Able to know law's of friction on Clutches, Brakes & Dynamometer.

Subject :	Fluid Mechanics (Theory)
Code:	BEME303T
Sr. No.	Course Outcome
BEME303T.CO1	To understand the behavior of fluids at rest or in motion and the subsequent effects of the fluids on the boundaries.
BEME303T.CO2	To gain conceptual understanding of fluids, fluid flows, their properties and various applications.
BEME303T.CO3	Know about the fluid Dynamics & introduction to Navier-Stroke's equation, Euler equation and Bernoulli's equation and its applications.
BEME303T.CO4	To develop analytical abilities related to fluid flows(Laminar & Turbulent flow , Dimensional analysis)

BEME303T.CO5	To understand and analysis of the flow through pipes & energy losses , transmission of powers.
BEME303T.CO6	To be able to apply the analytical tools to solve different types of problems related to fluid & fluid flow.

Subject :	MANUFACTURING PROCESS (Theory)
Code:	BEME304T
BEME304T.CO1	To define and explain various types of patterns, pattern materials, pattern allowances and various types of sand moulds, moulding sand and moulding machines.
BEME304T.CO2	To explain various elements of gating system, various types of furnaces, their operations, various special casting processes and gating system.
BEME304T.CO3	To define and explain / classify various welding joints, gas cutting process, weldability of metals and various defects in welding joints.
BEME304T.CO4	To compare between hot and cold working of metals and explain the working of rolling, forging, extrusion and drawing operations.
BEME304T.CO5	Explain and classify various types of press working machines, their drive mechanisms, press working operations and types of dies.

BEME304T.CO6	Explain various methods of moulding and joining plastics.
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Subject :	MANUFACTURING PROCESS (Practical)
Code:	BEME304P
BEME304P.CO1	To define and explain various types of patterns, pattern materials and pattern allowances and classify various moulding techniques
BEME304P.CO2	To Select / choose a particular method of casting for a given job.
BEME304P.CO3	To explain various operating parameters and components of cupola furnace.
BEME304P.CO4	To compare between hot and cold working of metals and explain the working of rolling, forging, extrusion and drawing operations.
BEME304P.CO5	To experiment with metal casting operation.

Subject :	ENGINEERING METALLURGY (Theory)
Code:	BEME305T
Sr. No.	Course Outcome
BEME305T.CO1	To understand the concepts of crystal structure, atomic structure of metals, imperfections, diffusion mechanisms and mechanism of plastic deformation,
BEME305T.CO2	To understand the solidification of pure metals and equilibrium diagrams.
BEME305T.CO3	To understand time-temperature transformation curves and heat treatment processes.
BEME305T.CO4	To get the knowledge of phase diagrams which are useful for design and control of heat treating processes of various plain carbon steel with engineering applications.
BEME305T.CO5	To get the knowledge of phase diagrams which are useful for design and control of heat treating processes of various ferrous & non ferrous metals & alloys with engineering applications.
BEME305T.CO6	To understand the different type of hardness measurement, non-destructive tests & powder metallurgy with applications.

Subject :	ENGINEERING METALLURGY (Practical)
Code:	BEME305P
Sr. No.	Course Outcome
BEME305P.CO1	To name, identify, demonstrate, examine and experiment with Metallurgical Microscope.
BEME305P.CO2	To define, classify, categorize ,analyze and compare crystal and metallographic structure of iron and its alloys due to heat treatments.
BEME305P.CO3	To choose, compare and make use of instruments to prepare specimen of plain carbon steel, Cast iron and non ferrous alloys to identify, compare and discuss about their application.
BEME305P.CO4	To find, apply, make use of instruments and apparatus to test the hardness of ferrous and nonferrous alloys.

Subject :	MACHINE DRAWING (Practical)
Code:	BEME306P

BEME306P.CO1	To understand the principles and requirements of machine & production drawings.
BEME306P.CO2	To learn various concepts of engineering,, Graphics like dimensioning, conventions and standards related to machine drawing to become professionally efficient.
BEME306P.CO3	To be able to draw & understand the moderate complex drawings of mechanical components and their assemblies.

Subject :	SEMINAR (Practical)
Code:	BEME307P
BEME307P.CO1	To develop an ability in student to work in actual working environment and to utilize technical resources.
BEME307P.CO2	To develop an ability in student to write technical documents and give oral presentations related to the work completed.

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DEPARTMENT OF MECHANICAL ENGINEERING
B.E FOURTH SEMESTER

COURSE OUTCOME

Subject :	APPLIED MATHEMATICS-IV (Theory)
Code:	BEME401T
Sr. No.	Course Outcome
BEME401T.CO1	Evaluate the numerical solution of Algebraic and Transcendental equation by Newton-Rapson method, analysis of linear equation by Gauss Jordan and Crout's method.
BEME401T.CO2	Evaluate the numerical solution of simultaneous and algebraic equation, differential equation and largest eigen values.
BEME401T.CO3	Explain concept of Z-transform and analyze by Partial Fraction method, Residual method.
BEME401T.CO4	Analyze the special function and series solution for differential equation.
BEME401T.CO5	Extend the concept of random variable and probability to solve Distribution and Expectation.
BEME401T.CO6	Analyze the special probability distributions and random process.

Subject :	ENGINEERING THERMODYNAMICS (Theory)
Code:	BEME402T
Sr. No.	Course Outcome
BEME402T.CO1	To understand the concept of thermodynamic, various laws of gases and various thermodynamic processes & cycles.
BEME402T.CO2	To study first law of thermodynamics and its application to evaluate open & closed systems, thermal components and devices.
BEME402T.CO3	To study second law of thermodynamics, entropy and its application to evaluate the performance of heat engine, heat pump, and refrigerator.
BEME402T.CO4	To study various steam properties, and analyze the various types of processes.
BEME402T.CO5	To study various types of gas power cycles and air standard cycles and their applications.
BEME402T.CO6	Study the different types of Air Standard Cycles, workdone and efficiency analysis.

Subject :	HYDRAULIC MACHINES (Theory)
Code:	BEME403T
Sr. No.	Course Outcome
BEME403T.CO1	To understand practical applications of fluid based on momentum and angular momentum principles.
BEME403T.CO2	To understand design parameters and performance characteristics of various turbo machines & devices.
BEME403T.CO3	To have a theoretical ground for calculation of various parameters of Reaction or pressure turbine.
BEME403T.CO4	To understand design parameters and performance characteristics of various hydrodynamics pumps.
BEME403T.CO5	To understand design parameters and performance characteristics of various Positive displacement pumps.
BEME403T.CO6	To have a theoretical ground for calculation of various parameters of Similitude, different Water lifting device.

Subject :	HYDRAULIC MACHINES (Practical)
Code:	BEME403P
Sr. No.	Course Outcome
BEME403P.CO1	To understand the performance of turbines and pumps and also learn to find out the hydraulic efficiencies of these machines.
BEME403P.CO2	To vary the application of momentum principle through performing few experiments in Lab.
BEME403P.CO3	To vary Bernoulli's equation and learn how to determine flow rate of fluid.
BEME403P.CO4	To understand design parameters and performance characteristics of various hydraulic machines and devices.
Subject:	MACHINING PROCESSES (Theory)
Code:	BEME404T

Sr. No.	Course Outcome
BEME404T.CO1	To understand the concept of theory of metal cutting, objectives of the various machine tools, constructional details and mechanisms involved in various machine tools ,constructional details and mechanisms involved in various machine tools. Also identify the cutting fluids and their properties.
BEME404T.CO2	To study and identify the machining parameters, different types of cutting tool materials and applications of Lathe.
BEME404T.CO3	To study and identify the machining parameters, different types of cutting tool materials applications of Shaper.
BEME404T.CO4	To study and identify the machining parameters, different types of cutting tool materials applications of Milling.
BEME404T.CO5	To study and understand Grinding operation.
BEME404T.CO6	To study Drilling, Boring and Broaching machines.
Subject :	MACHINING PROCESSES (Practical)
Code:	BEME404P

Sr. No.	Course Outcome
BEME404P.CO1	To classify/distinguish between single and multiple cutting tools, explain and illustrate tool geometry of single point cutting tool, various forces acting on single point cutting tool.
BEME404P.CO2	To define specifications of Lathe, identify parts of Lathe and Shaper Machines, explain function and use of various accessories and attachments of Lathe and Shaper Machines.
BEME404P.CO3	To perform various operations on Lathe, Shaper and drilling Machines.
BEME404P.CO4	To perform gear cutting operations on milling machine.
BEME404P.CO5	To study Grinding, Drilling, Boring and Broaching machines
Subject :	MECHANICS OF MATERIAL (Theory)
Code:	BEME405T
Sr. No.	Course Outcome

BEME405T.CO1	To be able to analyze different stresses, strains and deflections in a simple mechanical element under various loading and support conditions.
BEME405T.CO2	To understand the basic concepts involved in mechanics of materials, bending moment, shear force, stresses in beams, slope and deflection in beams under different loading and support conditions.
BEME405T.CO3	Analyse the deflection in beams know Principal stresses and strains.
BEME405T.CO4	Study Torsion of circular shafts, Column & Struts with simple problem.
BEME405T.CO5	Know fracture mechanics, Strain energy & impact loading.
BEME405T.CO6	Understand factor of safety, Statistical methods in determining factor of safety & theories of failure.
Subject :	MECHANICS OF MATERIAL (Practical)
Code:	BEME405P
Sr. No.	Course Outcome

BEME405P.CO1	Experimentation and performance on universal testing machine to determine tensile,compression and shear strength.
BEME405P.CO2	Experiment on impact testing machine for different materials for determining impact strength.
BEME405P.CO3	Experiment on brinell hardness testing machine to determine the hardness of the material.
BEME405P.CO4	Experiment on Torsion test.
BEME405P.CO5	Experiment on deflection of beam (Simply supported beam) for determining slope and deflection.
BEME405P.CO6	Experiment on helical spring to determine the deflection of spring.
Subject :	ENVIRONMENTAL STUDIES (Theory)
Code:	BEME406T
Sr. No.	Course Outcome

BEME406T.CO1	Recognize major concepts in environmental sciences and demonstrate in-depth understanding of the environment.
BEME406T.CO2	Develop analytical skills, critical thinking, and demonstrate problem-solving skills using scientific techniques.
Subject :	MINI PROJECT (Practical)
Code:	BEME407P
Sr. No.	Course Outcome
BEME407P.CO1	To convert an idea or concept into a simple working physical model.
BEME407P.CO2	To learn regarding fabrication /construction of a simple mechanical or electro-mechanical working model using various manufacturing processes.

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B.E FIFTH SEMESTER

COURSE OUTCOMES(CO'S)

Subject :	Industrial Economics & Entrepreneurship Development (Theory)
Code:	BEME501T
Sr. No.	Course Outcome
BEME501T.CO1	To understand different basic concepts, analysis of demand, its forecasting and elasticity, which help students to create new product.
BEME501T.CO2	To understand factors of production, laws of returns, costs, breaks even analysis and depreciation which helps students to justify a decision.
BEME501T.CO3	Students will become aware about inflation, deflation and its control measures market structure, concept and overview of stock market which helps students to evaluate markets.
BEME501T.CO4	Understanding the concepts of innovation and creativity, IPR and laws relating to it.
BEME501T.CO5	Understand the concept of entrepreneurship, types of entrepreneurs, achievement motivation, role of SSI. It helps students to employ better human resources.

BEME501T.CO6	Students will get knowledge of the preparation of project report and enterprenuerial support systems. It helps students to identify and recognize the use of resources.
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Subject :	DESIGN OF MACHINE ELEMENTS (Theory)
Code:	BEME502T
Sr. No.	Course Outcome
BEME502T.CO1	To understand the basic machine element design which includes the procedure of design under various loading conditions. Also design and analysis of various mechanical joints, machine components .
BEME502T.CO2	To understand design of various bolted and welded joints.
BEME502T.CO3	To understand design and analysis of shaft and springs.
BEME502T.CO4	To learn power screw design & clutches and brakes design.

Subject :	HEAT TRANSFER (Theory)
Code:	BEME504T

Sr. No.	Course Outcome
BEME504T.CO1	To learn the various modes of heat transfer and laws associated with it.
BEME504T.CO2	To distinguish between steady state and unsteady state heat transfer.
BEME504T.CO3	To understand and analysis the Forced convection .Also be able to apply knowledge of dimensional analysis to forced convection.
BEME504T.CO4	To understand and analysis the Free convection .Also be able to apply knowledge of dimensional analysis to forced convection.
BEME504T.CO5	To analyse radiation with and without radiation shield.
BEME504T.CO6	To be able to analyse & design heat exchangers.

Subject :	HEAT TRANSFER (Practical)
Code:	BEME504P
Sr. No.	Course Outcome
BEME504P.CO1	Able to apply knowledge of heat transfer to solve thermal engineering problems.
BEME504P.CO2	Able to design analyse and interpret heat transfer related data.

BEME504P.CO3	Able to identify, formulate and solve heat transfer related problems.
BEME504P.CO4	Able to evaluate the ammount of heat exchange for plane, cylindrical and spherical geometries and should be able to compare the performance of extended surfaces and heat exchangers.

Subject :	MECHANICAL MEASUREMENT & METROLOGY (Theory)
Code:	BEME505T
Sr. No.	Course Outcome
BEME505T.CO1	To study various measurement systems and their significance along with the characteristics and order of the instruments. Also to understand various instruments for the measurement of different parameters.
BEME505T.CO2	To understand various instruments for the measurement of linear and angular displacement, speed, force, torque and power. Also the selection & use of precision measuring instruments for various application.
BEME505T.CO3	To understand various instruments for the measurement of pressure, vacuume, sound, light and temperature.
BEME505T.CO4	To study various Standards of Measurement, concept of Straightness and flatness, various instruments for the Linear and Angular measurement. To learn the selection & use of precision measuring instruments for various application.
BEME505T.CO5	Understand limits, fits and tolerance, compare hole and shaft basis system.
BEME505T.CO6	To study about Comparator, Optical Porfile Projector, Tool makers microscope and Autocollimator.

Subject :	MECHANICAL MEASUREMENT & METROLOGY (Practical)
Code:	BEME505P
Sr. No.	Course Outcome
BEME505P.CO1	To analyze the relation between mechanical and electrical/electronic quantities in the process of determining static sensitivity and calibration and to analyze the sources and magnitude of errors introduced in measurements.
BEME505P.CO2	To define and explain measurement systems and understand the concepts of various measurement systems & standards with regards to realistic applications.
BEME505P.CO3	Describe functioning of force, speed, torque, pressure, strain and temperature measuring devices.
BEME505P.CO4	To get basics knowledge of Measurements, Metrology and Measuring devices.

Subject :	COMPUTER APPLICATION -I (Practical)
Code:	BEME506P
Sr. No.	Course Outcome
BEME506P.CO1	To solve engineering problems using computers with knowledge of C/C++ programming.

BEME506P.CO2	To write the programs for Numerical Methods & for problem solving in the area of Mechanical Engineering.
BEME506P.CO3	To understand the concept of OOPs and will get introduced with mathematical softwares.

Subject :	INDUSTRIAL VISIT (Practical)
Code:	BEME507P
Sr. No.	Course Outcome
BEME507P.CO1	To provide practical exposure to students and to provide opportunities for acquiring knowledge regarding manufacturing and service industries/organizations and to acquaint them with industrial culture.
BEME507P.CO2	To be able to describe the usage of different technologies/ tools / concepts related to Design process, operation of various machines, mechanical drives, manufacturing processes, machining processes, various process equipments, production techniques, quality control, maintenance practices, automation in industries, management etc.

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B.E SIXTH SEMESTER

COURSE OUTCOMES (CO'S)

Subject :	ENERGY CONVERSION- I (Theory)
Code:	BEME601T
Sr. No.	Course Outcome
BEME601T.CO1	To understand the the practical applications of thermodynamics.Also to gain the knowledge of various components of the thermal power plant.
BEME601T.CO2	To study and analysis of Draught and Steam generator.
BEME601T.CO3	To study different types of Fluidized Bed Boiler and Cogeneration.
BEME601T.CO4	To understand the performance and study of Steam Nozzles and Steam turbines.
BEME601T.CO5	Able to analyse the different types of Steam turbine.
BEME601T.CO6	To study different types of Steam condensers,Cooling Tower

Subject :	CONTROL SYSTEMS ENGINEERING (Theory)
Code:	BEME602T
Sr. No.	Course Outcome
BEME602T.CO1	To familiarize with concepts related to the operation, analysis and stabilization of control systems.To make understanding of various control systems and its stability analysis using analytical and graphical techniques.
BEME602T.CO2	To understand the concepts of Transfer function system representation through Block Diagram and Signal Flow Graph.
BEME602T.CO3	To Understand & analysis System Response & Time Domain Response Analysis, Signals, Mode of Controls, Controller Mechanisms.
BEME602T.CO4	To Know Control system analysis & plot the Root locus.
BEME602T.CO5	Study Frequency Domain analysis & Bode & Polar plot.
BEME602T.CO6	Understand State space representation of Continuous Time systems & Stability criterion.

Subject :	OPERATIONS RESEARCH (Theory)
Code:	BEME603T
Sr. No.	Course Outcome
BEME603T.CO1	To know a formal quantitative approach to problem solving. And to find some widely used mathematical models and have tools that students can use to solve management problems.
BEME603T.CO2	To Understand Transportation Model & Assignment Model and gain proficiency with this tools for optimization.
BEME603T.CO3	To analyse ,optimize and simulate the problems related to Game Theory, Sequencing Model, Inventory Model.
BEME603T.CO4	To Study and analyse the Network Model.
BEME603T.CO5	To Study and analyse the Replacement Model.
BEME603T.CO6	To Understand Queuing Theory and Simulations .And gain proficiency with this tools for optimization and simulations.

Subject :	Mechatronics (Theory)
Code:	BEME604T
Sr. No.	Course Outcome
BEME604T.CO1	To understand key elements of mechatronics, identify various input output devices in automated control system.
BEME604T.CO2	To understand concept of data acquisition system, interfacing of input output devices in automated system.
BEME604T.CO3	Understand mechanical actuating systems, microprocessors & microcontroller.
BEME604T.CO4	Understand concept of digital logic, pin configuration & architecture of 8085 microprocessor.
BEME604T.CO5	Understand basic concept of PLC, its operation and able to draw ladder diagram.
BEME604T.CO6	Understand benefits and application of SCADA, working & application of micro electro mechanical system.

Subject :	Mechatronics (Practical)
Code:	BEME604P
Sr. No.	Course Outcome
BEME604P.CO1	Understand key elements of mechatronics, identify various input output devices in automated systems control system & example of mechatronics.
BEME604P.CO2	Understand concept of data acquisition system, interfacing of input output devices in automated system.
BEME604P.CO3	Understand mechanical actuating systems, microprocessors & microcontroller.
BEME604P.CO4	Understand concept of digital logic, pin configuration & architecture of 8085 microprocessor.
BEME604P.CO5	Understand basic concept of PLC, its operation and able to draw ladder diagram.
BEME604P.CO6	Understand benefits and application of SCADA, working & application of micro electro mechanical system.

Subject :	Dynamics of Machine (Theory)
Code:	BEME605T
Sr. No.	Course Outcome
BEME605TCO1	To understand the concept in machine element dynamics.
BEME605TCO2	To understand the method of Dynamic force analysis of machinery.
BEME605TCO3	To understand Static & Dynamic balancing in rotating and reciprocating mechanism and their analysis.
BEME605TCO4	To understand the concept of single cylinder and multiple cylinder engine and their analysis.
BEME605TCO5	To understand the concept of vibratory systems and their analysis.
BEME605TCO6	To study the effect of undesirable effects of unbalances in rotors and engines.

Subject :	Dynamics of Machine (Practical)
Code:	BEME605P
Sr. No.	Course Outcome
BEME605P.CO1	Be proficient in the use of mathematical methods to analyse the forces and motion of complex systems of linkages, gears and cams.
BEME605P.CO2	Be able to design linkage, cam and gear mechanisms for a given motion or a given input/output motion or force relationship.
BEME605P.CO3	Be able to analyse the motion and dynamical forces acting on mechanical systems composed of linkages, gears and cams.

Subject :	Functional English (Theory)
Code:	BEME606T
Sr. No.	Course Outcome

BEME606T.CO1	To build the self confidence to face competitive examinations like GATE/TOFEL/CAT/MAT etc.
BEME606T.CO2	To use the functional grammar to strengthen their writing skills.
BEME606T.CO3	To acquire language skills required to write their Reviews/ Projects/Reports.
BEME606T.CO4	To organize their thoughts in English in research and projects activities.
BEME606T.CO5	To face job interviews more confidentially.

Subject :	Computer Application-II (Practical)
Code:	BEME607P
Sr. No.	Course Outcome
BEME607P.CO1	Understand the concepts & applications of DBMS.

BEME607P.CO2	Develop database modeling for a problem.
BEME607P.CO3	Implement a database query language.

Subject :	Industrial Case Study (Practical)
Code:	BEME608P
Sr. No.	Course Outcome
BEME608P.CO1	To acquaint the students with various industrial/organizational problems and how they can be solved using methods/ techniques/ theories etc. studied in curriculum.

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B.E SEVENTH SEMESTER
COURSE OUTCOMES (CO'S)

Subject :	INDUSTRIAL ENGINEERING (Theory)
Code:	BEME701T
Sr. No.	Course Outcome
BEME701T.1	To understand the knowledge and skills for designing work system as a form of integrated system,planning and controlling of a production system.
BEME701T.2	To apply work measurement technique to analyze work content to calculate standard time in given situation and make use of ergonomics for human comfort at work place.
BEME701T.3	To define,classify and analyze forecasting techniques.
BEME701T.4	To study reliability and maintainability techniques.
BEME701T.5	To study quality control tools to evaluate quality limits and to apply quality control technique in a given situation.

Subject :	ELECTIVE – I: AUTOMOBILE ENGINEERING (Theory)
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Code:	BEME702T3
Sr. No.	Course Outcome
BEME702T3.CO1	To understand the basic concepts of automobile and its components.
BEME702T3.CO2	To understand the principle and working of clutch and gear box.
BEME702T3.CO3	Illustrate the principle and working of Transmission system and identify the brake system.
BEME702T3.CO4	Identify the steering and suspension system
BEME702T3.CO5	Understand the applications of electrical/electronic system of automobile and wheels, tyres.
BEME702T3.CO6	To be able to understand the basics about the vehicle, its components and recent advances in automobiles. Appraise the automobile safety system and recent development in automobiles.

Subject :	ELECTIVE – I: POWER PLANT ENGINEERING (Theory)
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Code:	BEME702T4
Sr. No.	Course Outcome
BEME702T4.CO1	To aware and introduce about the Power generation plant and its economic analysis.
BEME702T4.CO2	It includes introduction, analytical and theoretical treatment of concepts with the right blend of theory design and practice of Seam Power Plant along with detailing of combined cycle mode of power generation.
BEME702T4.CO3	Aims to make the students aware about fluidised bed combustion which is one of the best clean coal technology which provides option for biomass conversion. Also introduce about the different types of steam generator.
BEME702T4.CO4	To introduce about the Hydroelectric power plant.
BEME702T4.CO5	It includes introduction, analytical and theoretical treatment of concepts with the right blend of theory design and practice of Nuclear Power Plant .
BEME702T4.CO6	It includes introduction, analytical and theoretical treatment of concepts with the right blend of theory design and practice of Gas turbine power plant and Diesel power plant .It also introduces emerging technology in power generation like wood/biomass power plant, waste fire power plant. Considering current global environmental scenario, emphasis is stressed over solar hydrogen systems and fuel cell. In depth knowledge of emerging technologies (alternative power plants).

Subject :	COMPUTER AIDED DESIGN (Theory)
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Code:	BEME703T
Sr. No.	Course Outcome
BEME703T.CO1	Understand Basic concept of CAD and be able to use them for modeling,designing and analysis of mechanical components.
BEME703T.CO2	Apply transformations on 2D & 3D objects, and determine the final state and shape of object.
BEME703T.CO3	Explain the different geometric modeling techniques, synthetic curves & methods of assembly modeling.
BEME703T.CO4	Apply finite element method on one dimensional bar element problem to determine nodal displacement, reaction force, element stress.
BEME703T.CO5	Apply finite element method on two dimensionalbar element and truss problem to determine nodal displacement, reaction force, element stress.
BEME703T.CO6	Calculate the optimization parameter and check the geometric constraints for each of the given set of material. Select the most suitable material by analyzing the results of these materials using Johnson Method of Optimization.

Subject :	COMPUTER AIDED DESIGN (Practical)
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Code:	BEME703P
Sr. No.	Course Outcome
BEME703P.CO1	Write logic in the form of an algorithm to construct geometric entities and generate a computer program for the same.
BEME703P.CO2	Write computer program for 2D and 3D Transformation on any object.
BEME703P.CO3	Generate 2-D and 3-D geometric model of Engineering object using construction and modifying commands using CAD software.
BEME703P.CO4	Develop finite element model of an engineering problem, apply loading conditions and boundary conditions, and solve it for analysis.

Subject :	ENERGY CONVERSION - II (Theory)
Code:	BEME704T
Sr. No.	Course Outcome

BEME704T.CO1	To study the energy conversion systems and power generation systems and understand the construction, operation and analysis of positive displacement air compressors
BEME704T.CO2	To understand the construction, operation and analysis of rotary ,centrifugal and axial flow air compressors
BEME704T.CO3	To study and understand the concept of Internal combustion engines.
BEME704T.CO4	To be able to analyse the performance of Internal combustion engines
BEME704T.CO5	To study and understand the concept of Refrigeration systems and also be able to analyse it.
BEME704T.CO6	To understand the performance of air conditioning and its installations.

Subject :	Energy Conversion-II (Practical)
Code:	BEME704P
Sr. No.	Course Outcome

BEME704P.CO1	To explain the working of Reciprocating compressor and evaluate the performance parameters of single stage Reciprocating air compressor.
BEME704P.CO2	To compare reciprocating and rotary compressor, explain and classify rotary compressor.
BEME704P.CO3	To explain, classify, analyze I. C engine and explain the phenomenon of stages of combustion in S.I & C.I engines, knocking and fuel supply systems.
BEME704P.CO4	To evaluate the performance parameters of I.C. engine and able to prepare heat balance sheet for I.C. Engine.
BEME704P.CO5	To explain the working of refrigeration systems and solve the problems related to single stage vapor compression refrigeration cycle.
BEME704P.CO6	To explain the working of air conditioning systems and solve simple problems on psychometrics.

Subject :	DESIGN OF MECHANICAL DRIVES (Theory)
Code:	BEME705T
Sr. No.	Course Outcome

BEME705T.CO1	Understand and Execute design of Coupling, Flywheel and Bearings and able to make use of design data for engineering problems and will learn the importance of standardization in dimensions ,etc.
BEME705T.CO2	To familiar with the design principles and design procedures of Flat belt drive, V- belt drive, Roller chain drive and Wire rope drive. To get handfull of information on how to select and design different type of drive.
BEME705T.CO3	To understand the design principles and design procedures of Gears and Gears drive and also explore engineering knowledge by solving given problems, there by strengthening the fundamentl concepts.
BEME705T.CO4	To familiar with the design principles and design procedures of Worm gear drives and I.C.Engine componentsable to make use of design data for engineering problems and will learn the importance of standardization in diamensions ,etc.

Subject :	DESIGN OF MECHANICAL DRIVES (Practical)
Code:	BEME705P
Sr. No.	Course Outcome
	Specifically, students will demonstrate the preceding abilities by performing correctly:
BEME705P.CO1	(i) the design, analysis and sizing of shafts, keys and couplings.

BEME705P.CO2	(ii) the selection of bearing types, and sizing and analysis of rolling element bearings.
BEME705P.CO3	(iii) the selection of gear types, sizing, analysis and material selection of gear systems.

Subject :	PROJECT SEMINAR (Practical)
Code:	BEME706P
Sr. No.	Course Outcome
BEME706P.CO1	To inculcate the habit of learning and work execution as a member of the team to achieve the final objective.
BEME706P.CO2	To identify a project topic, collection of literature, schedule preparation and report preparation with seminar delivery.
BEME706P.CO3	Students will demonstrate the ability to seek and learn a methodology to design a project in addition to the class topics through the completion of open ended project.

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B.E EIGHT SEMESTER COURSE OUTCOMES (CO'S)

Subject :	INDUSTRIAL MANAGEMENT (Theory)
Code:	BEME801T
Sr. No.	Course Outcome
BEME801TCO.1	To understand the concept of administration & management, principles of management.
BEME801TCO.2	To understand the concept of the personal management , worker's welfare, the recruitment, and man power planning at industry .
BEME801TCO.3	To explore the core concept in marketing, Product Life cycle, Pricing, Channel of product distribution, concept of material management, Purchase function, Vender Selection, Ethics in purchasing and various classification.
BEME801TCO.4	To aware about the concept of finance management, various sources of generating the finance .
BEME801TCO.5	To understand the concept of plant management, Lay-outs, Industrial safety programs, classification of production systems.
BEME801TCO.6	To aware about the concept of recent trends in production and operation management.

Subject :	ELECTIVE – II : COMPUTER INTEGRATED MANUFACTURING (Theory)
Code:	BEME802T2
Sr. No.	Course Outcome
BEME802T2.CO1	To understand Computer Integrated Manufacturing (CIM) systems and to acquaint the students with data bases and numerical analysis related to CIM.
BEME802T2.CO2	To get introduced with NC, CNC & DNC system.
BEME802T2.CO3	To get introduced with group technology and numerical analysis related to CIM.
BEME802T2.CO4	To get introduced with Flexible manufacturing systems .
BEME802T2.CO5	To understand the concept of various Manufacturing planning like Computer Aided Process Planning (CAPP) Systems, Robotic Systems.
BEME802T2.CO6	To understand the concept of Manufacturing system control and to have understanding about Automated Material Handling Systems, Automated Inspection Systems.

Subject :	ELECTIVE – II : COMPUTER INTEGRATED MANUFACTURING (Practical)
Code:	BEME802P2
Sr. No.	Course Outcome
BEME802P2.CO1	To understand product development cycle in CIM and basic components and classification of NC system.
BEME802P2.CO2	To apply programming knowledge to write manual part programming for a component in CNC Lathe and CNC Milling.
BEME802P2.CO3	To understand parts classification and coding using Group Technology.
BEME802P2.CO4	To study about Computer Aided Process Planning (CAPP) Systems and Flexible Manufacturing Systems (FMS).

Subject :	ELECTIVE-II Refrigeration and Air Conditioning
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Code:	BEME802T5
Sr. No.	Course Outcome
BEME802T5 CO1	To understand the basic concept of refrigeration. Also will enhance the knowledge about the environmental impact of refrigerants and alternative refrigerants . It will be conversant with domestic, commercial and industrial applications of refrigeration.
BEME802T5 CO2	To understand the concept of Compound Vapor Compression Refrigeration system and multiple evaporator system and able to analyze it.
BEME802T5 CO3	To be able to understand the non-conventional refrigeration system and able to analysis of air cycle refrigeration.
BEME802T5 CO4	To understand the concept of Cryogenics and its applications.
BEME802T5 CO5	To get the knowledge of air conditioning which includes psychometric, heat load calculations, design of air conditioning system. It will be conversant with domestic, commercial and industrial applications of air conditioning.
BEME802T5 CO6	To understand the concept of Air transmission and distribution systems and able to analyze it.

Subject :	ELECTIVE-II Refrigeration and Air Conditioning
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Code:	BEME802P5
Sr. No.	Course Outcome
CO-1	Demonstrate the use of various tools and equipments used for installation, maintenance & repair of refrigeration systems and testing and charging of vapour compression refrigeration system.
CO-2	Understand and analyse various types of compressor, condenser, expansion devices and evaporators used in RAC and also perform experiments on vapour compression test rig to determine COP of the system.
CO-3	Understand and analyse vortex tube, window air conditioning system and performs experiments on Air-conditioning test rig.

Subject :	ELECTIVE-III: ADVANCE INTERNAL COMBUSTION (IC) ENGINE (Theory)
Code:	BEME803T5
Sr. No.	Course Outcome
BEME803T5.CO1	To understand the basic concept of I.C. engine and its components. Also it will be able to understand the basic about I.C engine, its components, working and recent advancement in I.C. engine.

BEME803T5.CO2	It includes information of different engine operating cycles, engine lubrication, engine cooling, automobile fuel, fuel supply system .
BEME803T5.CO3	To understand the combustion in S.I. engine and able to analyse it.
BEME803T5.CO4	To understand the combustion in C.I. engine and able to analyse it.
BEME803T5.CO5	To study the air pollution and its control.
BEME803T5.CO6	To understand the performance and testing of I.C. engine.

Subject :	AUTOMATION IN PRODUCTION (Theory)
Code:	BEME804T
Sr. No.	Course Outcome

BEME804T.CO1	To introduction to automation and its types. Also will get the understanding regarding how automation is used to increase production.
BEME804T.CO2	To get exposed to automation, numerical control system, NC machines,method of part programming, CNC machines, DNC machines.
BEME804T.CO3	To understand the concept of industrial robotics and it will be conversant with its applications in industry.
BEME804T.CO4	To cultivate understanding about automated material handling systems, automated storage and retrieval system. automated inspection .
BEME804T.CO5	To cultivate understanding about automated inspection and group technology. Also it will be conversant with its applications in industry.
BEME804T.CO6	To acquire the knowledge about computer aided manufacturing (CAM) ,Flexible manufacturing system [FMS] and computer aided process planning (CAPP) and its recent trends in industry.

Subject :	AUTOMATION IN PRODUCTION (Practical)
Code:	BEME804P

Sr. No.	Course Outcome
BEME804P.CO1	To study about automation in production and apply programming knowledge to write manual part programming for a component in CNC Lathe.
BEME804P.CO2	To apply programming knowledge manual part programming for a component in CNC Milling machine.
BEME804P.CO3	To create a part programming for a component using APT language
BEME804P.CO4	To identify and define various links and joints and movements of Robot.
BEME804P.CO5	To justify classification of parts using Group Technology.
BEME804P.CO6	To analyze and defend case study on automated system of Industry.

Subject :	ENERGY CONVERSION - III (Theory)
Code:	BEME805T

Sr. No.	Course Outcome
BEME805T.CO1	Understand the overall gas turbine cycle ,analyze and evaluate it'sknowledge in the field of power generation, aviation and also in the field of oil and gas industry.
BEME805T.CO2	Understand the principles and working of turbojet,turboprop,Ramjet and it's analysis. Study about Nuclear power plant.
BEME805T.CO3	To study various non conventional energy sources and their significance in present energy crises.
BEME805T.CO4	To study the current energy scenario, various energy conservation techniques and energy auditing.
BEME805T.CO5	To understand various Hydraulics techniques used in various applications & industries.
BEME805T.CO6	To understand various Pneumatic techniques used in various applications & industries.

Subject :	ENERGY CONVERSION - III (Practical)
Code:	BEME805P

Sr. No.	Course Outcome
BEME805P.CO1	Able to understand the working phenomenon and applications of Gas Turbine and Jet Propulsion.
BEME805P.CO2	Able to understand the working and various application of Solar Energy.
BEME805P.CO3	Able to understand the importance of energy audit and management . It also gives brief idea about India's Energy Scenario.
BEME805P.CO4	Able to compare the component details of Hydraulic and Pneumatic system in detail.
BEME805P.CO5	Able to understand and indentify the application areas of Hydraulic and Pneumatic system in detail.

Subject :	PROJECT (Practical)
Code:	BEME806P
Sr. No.	Course Outcome

BEME806P.CO1	To inculcate the habit of independent learning & work execution and also in a capacity as a member of group to achieve the final intended objectives.
BEME806P.CO2	To be able to apply the acquired knowledge for solving real life engineering problems.


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Course Outcome

Department of ELECTRONICS AND TELECOMMUNICATION ENGINEERING

3rd Semester BE

Subject	Applied Mathematics III
code	BEENE301T
Sr No.	Course Outcome
BEENE301T.1	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.
BEENE301T.2	Competent to work out the Fourier series representation of a periodic function in both exponential and sine-cosine forms and to solve partial differential equation and use Fourier transforms and its inverse in practical applications.
BEENE301T.3	Find extreme values of functional using Euler's eq. and also apply knowledge to solve Isoperimetric problems and boundary value problems.
BEENE301T.4	Understand analytic function of a complex variable and are able to apply Cauchy integral theorem and residue theorem to solve contour integrations.

BEENE301T.5	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
BEENE301T.6	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

Subject	Electronic Devices & Circuits (T)
code	BEENE302T
Sr No.	Course Outcome
BEENE302T.1	Explain the details of semi-conductor diode and its application.
BEENE302T.2	Explain the construction and biasing of transistors.
BEENE302T.3	Analyze transistor in AC amplifier
BEENE302T.4	Apply Transistor as a Oscillator and Multi-vibrator.

BEENE302T.5	Apply Transistor as a Power amplifier.
BEENE302T.6	Analyze and design amplifier circuits employing FET devices.

Subject	Electronic Devices & Circuits (P)
code	BEENE302P
Sr No.	Course Outcome
BEENE302P .1	Analyze various semiconductor devices
BEENE302P.2	Analyze, design and apply amplifier circuit employing BJT and FET
BEENE302P.3	Demonstrate various applications of BJT and FET

Subject	Object Oriented Programming and Data Structure (T)
code	BEENE304T
Sr No.	Course Outcome
BEENE304T.1	Describe the concept of procedural languages and implement the concept of object oriented programming using C++ programs.
BEENE304T.2	Implement the feature of OOPs using generic programming method.
BEENE304T.3	Describe the concept of inheritance and implement its various methods using C++ Programs.
BEENE304T.4	Describe the use pointer in data structure using array and implement it using sorting and searching methods.
BEENE304T.5	Analyse the concept of Stack, Linked List and Queue and implement its algorithm using C++ Program.
BEENE304T.6	Analyze the concept of TREE and its traversals using C++ Program.

Subject	Object Oriented Programming and Data Structure (P)
code	BEENE304P
Sr No.	Course Outcome
BEENE304P.1	Implement the concept of object oriented programming and data structure algorithms using C++ programming. Also implement the problem solving approaches using variables and operators
BEENE304P.2	Design the C++ programs using the features of Object Oriented Programming and data structure.
BEENE304P.3	Integrate these data structures using sorting and searching algorithms in C++ programs

Subject	Electronics Measurement & Instrumentation (T)
code	BEENE303T
Sr No.	Course Outcome

BEENE303T.1	Elucidate basic concepts & basic principles of measuring instruments definitions of static & dynamic characteristics of instruments in measurement
BEENE303T.2	Explain the operation & design of various electronic instruments like PMMC galvanometer ammeter , AC&DC voltmeter for measurement
BEENE303T.3	Analyze, demonstrate working of various AC & DC bridges & their applications in the measurement & instrumentation system
BEENE303T.4	Describe the operation of various types transducers and use them for measurement of pressure, temperature, level, displacement & flow
BEENE303T.5	Explain the operation & working of oscilloscopes & the basic circuit blocks in the design of oscilloscope , dual beam , dual trace oscilloscope & application of CRO in the measurement circuitry & design of various function generators, signal generators, AF&RF generators
BEENE303T.6	Explain the construction & operation of signal analyzer, wave analyzer, spectrum analyzer, signal conditioning system & its necessity, data acquisition system.

Subject	Electronics Measurement & Instrumentation (P)
code	BEENE303P
Sr No.	Course Outcome

BEENE303P.1	Measure the resistance ,inductance and capacitance by AC/DC Bridges
BEENE303P.2	Use the various measuring instruments such as CRO, Function generator & Spectrum analyser
BEENE303P.3	Measure various physical parameters by using various types of transducers

Subject	Network Analysis & Synthesis
code	BEENE305T
Sr No.	Course Outcome
BEENE305T.1	Analyze circuit systems using direct application of Kirchhoff's Current and Voltage Laws along with Ohm's Law.
BEENE305T.2	Apply network theorems to simplify circuits
BEENE305T.3	Analyze the series resonant and parallel resonant circuit.

BEENE305T.4	Design attenuators, filters and understand the basics of transmission lines.
BEENE305T.5	Analyze the steady state and transient response of simple electric circuits.
BEENE305T.6	Evaluate two-port network parameters of any network

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Course Outcome

**Department of ELECTRONICS AND TELECOMMUNICATION
ENGINEERING**

4th Semester BE

Subject	Applied Mathematics-IV
code	BEENE401T
Sr No.	Course Outcome

BEENE401T1	Apply numerical method to solve algebraic, transcendental and system of simultaneous linear equation. Also solve differential equation and Matrix by numerical method.
BEENE401T2	Calculate 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.
BEENE401T3	Use series solution to solve differential equation.
BEENE401T4	Analyze Probability Theory and use it for analysis of data. Understand the basic concepts of probability, random variables, probability distribution, and joint probability distribution. Also apply probability theory via Bayes' Rule.
BEENE401T5	Calculate the mean, median, mode, range, and standard deviation for a given data set and also use method of moments and moment generating functions.
BEENE401T6	Collect, analyse the data statistically, describe sampling distributions of sample means and sample proportions using the appropriate distribution, e.g. normal, binomial, etc. and explain the central limit theorem.

Subject	Power Devices & Machines(T)
code	BEENE402T
Sr No.	Course Outcome

BEENE402T1	Explain the basics of different components used in Power Electronics.
BEENE402T2	Analyze the working and characteristics of different power devices along with their applications in Electronic circuits.
BEENE402T3	Explain the concept of AC-DC converters which are widely used in industries.
BEENE402T4	List, classify, analyze Choppers which are widely used in industries.
BEENE402T5	Understand the concept of Inverters which are widely used in industries.
BEENE402T6	Classify AC/DC machines and propose their speed control methods

Subject	Power Devices & Machines (P)
code	BEENE402P
Sr No.	Course Outcome

BEENE402P1	Understand the working and nature of characteristics of different power components used in Power Devices.
BEENE402P2	Be able to calculate performance parameters for different devices and perform different tests on Transformers and motors for calculating the losses, efficiency, regulation etc
BEENE402P3	Understand the concept of starters used for starting AC/DC motors and their speed control methods.

Subject	Electromagnetic Field (T)
code	BEENE403T
Sr No.	Course Outcome
BEENE403T1	Analyze different coordinate system for mathematical analysis of Electromagnetic Engineering
BEENE403T2	Explain the concepts of Electric field, Gauss's law and its applications.
BEENE403T3	Apply concepts of Biot-Savert's Law, Ampere's circuital Law

BEENE403T4	Make use of time-varying electromagnetic field as governed by Maxwell's equations.
BEENE403T5	Use the waveguides for the transmission of electromagnetic waves at higher frequencies.
BEENE403T6	Explain the basic concepts of Radiation and Elements used for radiation along with the basic terminologies.

Subject	Digital Circuits And Fundamental of Microprocessor (T)
code	BEENE404T
Sr No.	Course Outcome
BEENE404T1	Identify, classify, make use of the Combinational Circuits using Logic Gates.
BEENE404T2	Design Arithmetic and Logical Circuits
BEENE404T3	Explain the Sequential Logic Circuits using Flip-Flop..

BEENE404T4	Design Sequential Circuits such as Register, Counter and Sequence Generator.
BEENE404T5	Elucidate the Digital Logic Family.
BEENE404T6	Explain the Basic Fundamentals of 8085 Microprocessor.

Subject	Digital Circuits And Fundamental of Microprocessor (P)
code	BEENE404P
Sr No.	Course Outcome
BEENE404P1	Understand the fundamental of basic logic gates and their use in combinational and sequential circuits.
BEENE404P2	Demonstrate the use of digital components as a switching element.
BEENE404P3	Construct basic arithmetic and logical circuits required in Microcomputer System.

Subject	Signals & Systems
code	BEENE405T
Sr No.	Course Outcome
BEENE405T1	Model the different types of signals and systems using appropriate mathematical techniques & Apply Fourier series and Fourier transform for analysis of signals.
BEENE405T2	Apply the concept of probability theory pertaining to communication system.
BEENE405T3	Apply the concept of Source coding and decoding schemes for application needed
BEENE405T4	Describe and distinguish the different analog modulation schemes.
BEENE405T5	Describe and distinguish the different digital modulation schemes
BEENE405T6	Apply the knowledge of information theory for comparing various codes in digital communication.

Subject	Environmental Studies
code	BEENE406T
Sr No.	Course Outcome
BEENE406T1	Understand the importance and become aware of the upcoming environmental issues
BEENE406T2	Understand the importance of natural resources and can work for their conservation
BEENE406T3	Gain knowledge about the various ecosystems existing in nature and their importance for conservation of nature.
BEENE406T4	Learn about the biodiversity at local, national and global levels and the importance of wild life conservation
BEENE406T5	Gain knowledge about different types of environmental pollution, their effects and control of pollution for the benefit of mankind
BEENE406T6	Develop analytical skills, critical thinking and demonstrate problem solving skills using scientific technique.

Subject	Software Workshop (P)
code	BEENE407P
Sr No.	Course Outcome
BEENE407P1	Formulate and verify the mathematical equation using MATLAB.
BEENE407P2	Implement and Plot various functions using different graphical techniques.
BEENE407P3	Draw, analyze and plot the electronic circuits using pSpice Software.

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Course Outcome
Department of ELECTRONICS AND TELECOMMUNICATION ENGINEERING
5th Semester BE

SUBJECT	Antenna & Wave Propagation
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CODE	BEETE501T
SR. NO.	Course outcomes
BEETE501T1	Describe transmission line characteristics.
BEETE501T2	Calculate antenna parameters (radiation pattern, beam width, lobes, directivity, gain, impedance, efficiency, polarization)
BEETE501T3	Analyze wire antennas (monopoles, dipoles, and loops)
BEETE501T4	Analyze and design antenna arrays.
BEETE501T5	Describe the operation of broadband and traveling wave antennas.
BEETE501T6	Describe the operation of aperture and reflector antennas.
BEETE501T7	Analyze and design Micro strip antennas.

Subject	Microprocessor & Microcontroller
code	BEENE502T
Sr No.	Course Outcome
BEENE502T1	Understand the internal organization of Microprocessor 8086 and write an assembly language programs using its Instruction set.
BEENE502T2	Interface different peripheral IC's with 8086 microprocessor by employing interfacing concepts.
BEENE502T3	Design an assembly language program to interface the various peripheral ICs with microprocessor 8086.
BEENE502T4	Interface math co-processor 8087 with 8086 and write its assembly language program
BEENE502T5	Demonstrate the internal organization of microcontroller 8051 and explain the concept of interrupt and its uses.
BEENE502T6	Design an assembly language program to interface the various peripheral ICs with microcontroller 8051.

Subject	Analog Circuits & Design
code	BEENE503T
Sr No.	Course Outcomes
BEENE503T1	Analyze basic differential amplifier using transistor and its application in op-amp building blocks
BEENE503T2	Demonstrate the use of op-amp in linear applications
BEENE503T3	Analyze and make use of op-amp in non-linear applications and design multi vibrator circuits using IC 555.
BEENE503T4	Design the series voltage regulator, IC voltage regulators and SMPS
BEENE503T5	Compare and design the sinusoidal oscillators & function generator
BEENE503T6	Design of active filters ,relay driver and Servo Motor & Stepper Motor control circuits

Subject	Communication Electronics
code	BEENE504T
Sr No.	Course Outcomes
BEENE504T1	Describe the different blocks in communication system and distinguish different Amplitude modulation schemes with their advantages, disadvantages and applications.
BEENE504T2	Analyze the Generation and Detection of FM Signal and Compare Amplitude & Angle modulation schemes.
BEENE504T3	Differentiate between various Pulse & Digital Modulation - Demodulation Techniques.
BEENE504T4	Identify Different type of Noises and its Sources.
BEENE504T5	Describe the different Radio Receiver components.

BEENE504T6	Differentiate Multiplexing Techniques and understand different Broadband Communication links.
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Subject	Industrial Economics & Entrepreneurship Development
code	BEENE505T
Sr No.	Course Outcomes
BEENE505T1	Understand the scope of an industrial economics and entrepreneurship development.
BEENE505T2	Analyze key areas of business development
BEENE505T3	Identify sources of finance for business development.
BEENE505T4	Apply techniques for project preparation.

BEENE505T5	Understand various methods of taxation and tax benefits
BEENE505T6	Understand significance of entrepreneurship and economic growth.

Subject	Microprocessor & Microcontroller (P)
code	BEENE502P
Sr No.	Course Outcomes
BEENE502P.1	Analyze the internal organization of Microprocessor and Microcontroller and demonstrate the instruction set by performing the Assembly languages programs.
BEENE502P.2	Demonstrate the simulation of the programming on software and verify the results.
BEENE502P.3	Design interface of 8086 & 8051 with keyboard / Display, ADC/DAC, Stepper motor along with some peripheral ICs like 8254, 8259, etc.

Subject	Analog Circuits & Design PRATICAL
code	BEENE503P
Sr No.	Course Outcomes
C503P.1	Test and design analog electronic circuits using OP-AMP
C503P.2	Test and design voltage regulators
C503P.3	Analyze and Design the oscillators and active filters.

Subject	Communication Electronics
code	BEENE504P
Sr No.	Course Outcomes
C504P.1	Demonstrate and analyze different Analog Modulation & De-Modulation techniques used in Electronic Communication system.
C504P.2	Demonstrate different Pulsating Modulation & De-Modulation techniques and plot the waveforms.
C504P.3	Demonstrate Time division Multiplexing & De- Multiplexing.

Course Outcome

**Department of ELECTRONICS AND TELECOMMUNICATION
ENGINEERING**

6th Semester BE

Subject	Telecommunication Switching System (T)
code	BEECE601T
Sr No.	Course Outcome
BEECE601T1	Describe the need for switching systems and their evolution from analogue to digital.
BEECE601T2	Describe the Public switched Telephone Network
BEECE601T3	Describe private network
BEECE601T4	Describe integrated networks

Subject	Digital Signal Processing (T)
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code	BEENE602T
Sr No.	Course Outcome
BEENE602T1	Identify discrete-time signals and systems and determine the response. Understand the concept of sampling and reconstruction.
BEENE602T2	Describe z-transform for analysis of signals and systems.
BEENE602T3	Describe the discrete Fourier transform (DFT) for analysis of signals and system.
BEENE602T4	Design and implement digital IIR filter for various applications..
BEENE602T5	Design and implement digital FIR filter for various applications.
BEENE602T6	Describe the concept of multi rate signal processing and how to apply it for the wavelet transform.

Subject	Digital Signal Procesing (P)
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code	BEENE602P
Sr No.	Course Outcome
BEENE602P1	Analyze and process the signals in the discrete domain.
BEENE602P2	Design the filters to suit requirements of specific applications.
BEENE602P3	Apply the techniques skills, and modern engineering tools like MATLAB and digital processors.

Subject	Control System Engg.
code	BEENE603T
Sr No.	Course Outcome
BEENE603T1	Understand control systems in brief- its types, classifications. Identify its basic elements & write the Mathematical Modelling.

BEENE603T2	To understand utility of Laplace transforms and transfer functions for modelling complex interconnected systems
BEENE603T3	Analyze the steady state and transient response characteristics of different order systems for standard test signals and find the relative stability.
BEENE603T4	Analyze the stability of the system using various frequency response method
BEENE603T5	Analyze the use and need of different types of compensators
BEENE603T6	The ability to derive, interpret and solve problems using modern state space control methods for continuous time systems.

Subject	Digital Communication (T)
code	BEENE604T
Sr No.	Course Outcome
BEENE604T1	Model the digital communication system using appropriate mathematical techniques.

BEENE604T2	Apply the concept of Source coding and decoding techniques used in digital Communication.
BEENE604T3	Describe digital modulation concept and Compare different digital modulation techniques.
BEENE604T4	Describe and apply the concept of Waveform coding and decoding techniques
BEENE604T5	Describe and apply the concept of coding and decoding techniques used in telecommunication.
BEENE604T6	Describe the spread spectrum Communication concepts.

Subject	Digital Communication (P)
code	BEECE604P
Sr No.	Course Outcome
BEECE604P1	Describe the concept of the digital communication based design for testing and analyze the circuits.

BEECE604P2	Design and conduct experiments for testing digital communication circuits and systems.
BEECE604P3	Analyze the different coding techniques for design and modeling of digital communication Identify, formulated and solve digital communication circuits and systems problems.

Subject	Functional English
code	BEENE605T
Sr No.	Course Outcome
BEENE605T1	Clear the concept of grammar usage and vocabulary
BEENE605T2	Prepare student for analytical approach to English language for competitive exams like TOFEL, GRE
BEENE605T3	Student learns the correct method for formal correspondence while drafting professional and technical correspondence. They also learn documentation and to convey different message to different kind of audience
BEENE605T4	Enhance reading ability and speed. To understand the basic concept given in the text

Subject	Electronics Workshop Practice (P)
code	BEENE606P
Sr No.	Course Outcome
BEENE606P1	Use DSO and Spectrum Analyzer
BEENE606P2	Design PCB using PCB designing software.
BEENE606P3	Design & fabricate mini project

Subject	Industrial Visit(P)
code	BEENE607P

Sr No.	Course Outcome
BEENE607P1	Apply this knowledge during their project and may be useful in future.
BEENE607P2	Use different tools (computer tools and statistics) to aid the assessment processes
BEENE607P3	Understand what professional ethics are and how do ethics affect the outcomes of laws and regulation

Madhukarrao Pandav College Of Engineering Bhilewada, Bhandara

Course Outcome

Department of ELECTRONICS AND TELECOMMUNICATION

ENGINEERING

7th Semester BE

Subject	DSP PROCESSOR & ARCHITECTURE (T)
code	BEECE701T/ BEETE701T/ BEENE701T
Sr No.	Course Outcome

1	to describe the detailed architecture, addressing mode, instruction sets of TMS320C5X
2	to write program of DSP processor
3	to design & implement DSP algorithm using code composer studio
4	to design decimation filter and interpolation filter.

Subject	DSP PROCESSOR AND ARCHITECTURE (P)
code	BEENE701P/ BEECE701P/ BEETE701P
Sr No.	Course Outcome
1	Understand the architecture of TMS and Motorola Processors.

2	Implement different processing algorithms on DSP processors
3	Design different types of filters and study their characteristics.

Subject	TELEVISION AND VIDEO ENGINEERING (T)
code	BEECE702T/ BEETE702T
Sr No.	Course Outcome
1	analyze and understand colour T.V. System
2	understand fundamental techniques of Different T.V. standards
3	understand Advanced T.V. Technology.

4	understand different video recording, display and its consumer application
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Subject	TELEVISION AND VIDEO ENGINEERING (P)
code	BEECE702P/ BEETE702P
Sr No.	Course Outcome
1	To perform practical at a comprehensive coverage of Television Systems with all the new developments in Television Engineering
2	To study and observe the RF based Transmission and Receptions in Audio and Video Mode
3	To develop necessary expertise in handling hardware projects related television subject.
4	To train students in operating and maintenance of all the sophisticated and latest equipment and machinery related to this subject.

Subject	OPTICAL COMMUNICATION
code	BEECE703T/ BEETE703T/ BEENE703T
Sr No.	Course Outcome
1	learn the basic elements of optical fiber.
2	understand the different kinds of losses, signal distortion in optical wave guides & other signal degradation factors.
3	classify various optical source materials, LED structures, LASER diodes
4	learn the fiber optic receivers such as PIN, APD diodes, receiver operation & performance.
5	understand the operational principal of WDM, SONET, measurement of attenuation, dispersion, refractive index profile in optical fibers.

Subject	Advanced Digital System Design (T)
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code	BEECE704T/ BEETE704T/BEENE704T
Sr No.	Course Outcome
1	Design of combinational & sequential circuit.
2	Develop skilled VLSI front end designers
3	Implementation of digital system.
4	Experimentation on Hardware /Software co-design

Subject	Advanced Digital System Design (P)
code	BEENE704P/ BEECE704P/ BEETE704P

Sr No.	Course Outcome
1	to model, simulate, verify the digital model with hardware description language.
2	to design and prototype with programmable logic devices
3	to learn the modular design style to create large digital logic circuits
4	to create and simulate basic circuit modules (or macros) using VHDL

Subject	ELECTIVE 1 - FUZZY LOGIC & NEURAL NETWORK
code	BEECE705T/ BEETE705T
Sr No.	Course Outcome

1	Understand the adequate knowledge about feedback neural networks
2	Understand the concept fuzzy logic control to real time systems.
3	provide adequate knowledge about fuzzy set theory.
4	provide comprehensive knowledge of fuzzy logic control and adaptive fuzzy logic
5	study and understand defuzzification techniques

Subject	ELECTIVE 1 - MICROELECTROMECHANICAL SYSTEMS AND SYSTEM ON CHIP
code	BEECE705T/ BEETE705T
Sr No.	Course Outcome

1	Understand working principles of currently available microsensors, actuators used in Microsystems.
2	Apply scaling laws that are used extensively in the conceptual design of micro devices and systems
3	Understand the basic principles and applications of micro-fabrication processes, such as photolithography, ion implantation, diffusion, oxidation, CVD, PVD, and etching
4	Choose a micromachining technique, such as bulk micromachining and surface micromachining for a specific MEMS fabrication process
5	Consider recent advancements in the field of MEMS and devices

Subject	ELECTIVE 1 - DATA COMPRESSION & ENCRYPTION
code	BEECE705T/ BEETE705T
Sr No.	Course Outcome

1	implement various text, audio, video, compression technique.
2	provide various authentication using digital communication.
3	gain the knowledge of encryption techniques application to digital communication.

Subject	ELECTIVE 1 - VLSI SIGNAL PROCESSING
code	BEECE705T/ BEETE705T
Sr No.	Course Outcome
1	Learn various methodologies to optimize power delay and area of VLSI design.
2	Build Real Time processing system

3	Design of algorithm structure for DSP algorithms based on algorithm transformation
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Madhukarrao Pandav College Of Engineering Bhilewada, Bhandara

Course Outcome

Department of ELECTRONICS AND TELECOMMUNICATION

ENGINEERING

8th Semester BE

Subject	MICROWAVE AND RADAR ENGINEERING
code	BEECE801P/ BEETE801P
Sr No.	Course Outcome
1	Describe working of microwave bench
2	Measure power & VSWR of microwave component
3	Analyze the S-parameter of microwave component.

Subject	COMPUTER COMMUNICATION NETWORK (T)
code	BEECE802T/ BEETE802T/ BEENE802T
Sr No.	Course Outcome
1	To explain the basic concept of computer communication network.
2	To explain the computer network layer
3	To explain IP addressing scheme.
4	To explain network process.
5	To study Hardware aspect of network communication

Subject	COMPUTER COMMUNICATION NETWORK (P)
code	BEECE802P/ BEETE802P/ BEENE802P
Sr No.	Course Outcome
1	Various physical equipment's used for networking
2	Various types of protocols working on various layers of OSI reference model
3	Connecting computers in Local Area Network

Subject	WIRELESS & MOBILE COMMUNICATION
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code	BEECE803T/ BEETE803T
Sr No.	Course Outcome
1	Design a model of cellular system communication and analyze their operation and performance
2	Quantify the causes and effects of path loss and signal fading on received signal characteristics.
3	to construct and analyze the GSM system

Subject	Elective 2- WIRELESS SENSOR NETWORK
code	BEECE804T/ BEETE804T
Sr No.	Course Outcome
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

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.
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.

Subject	Elective 2- EMBEDDED SYSTEMS
code	BEECE804T/ BEETE804T
Sr No.	Course Outcome
1	Design embedded based system.
2	Design embedded system based on RTOS and communication protocols.

Subject	Elective 2- DIGITAL IMAGE PROCESSING
code	BEECE804T/ BEETE804T
Sr No.	Course Outcome
1	have an appreciation of the fundamentals of Digital image processing including the topics of filtering, transforms and morphology, and image analysis and compression
2	Implement basic image processing algorithms in MATLAB.
3	Have the skill base necessary to further explore advanced topics of Digital Image Processing.
4	make a positive professional contribution in the field of Digital Image Processing

Subject	Elective 2- ARTIFICIAL INTELLIGENCE
code	BEECE804T/ BEETE804T
Sr No.	Course Outcome
1	understand the history, development and various applications of artificial intelligence;
2	familiarize with propositional and predicate logic and their roles in logic programming;
3	understand the programming language Prolog and write programs in declarative programming style;
4	.learn the knowledge representation and reasoning techniques in rule-based systems, case-based systems, and model-based systems;
5	understand how uncertainty is being tackled in the knowledge representation and reasoning process, in particular, techniques based on probability theory and possibility theory (fuzzy logic)

Subject	Elective 3- RANDOM SIGNAL THEORY
code	BEECE805T/ BEETE805T
Sr No.	Course Outcome
1	Apply theory of probability in identifying and solving relevant problems.
2	Define and differentiate random variables and vector through the use of cumulative distribution function (CDF), probability density function (PDF), probability mass function (PMF) as well as joint, marginal and conditional CDF, PDF and PMF.
3	Show probability and expectation computations using important discrete and continuous random variable types.
4	Define and specify random processes and determine whether a given process is stationary or wide sense stationary.

Subject	Elective 3- ROBOTICS & AUTOMATION
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code	BEECE805T/ BEETE805T
Sr No.	Course Outcome
1	Explore 8051 microcontroller architecture
2	Effectively utilize instruction set for assembly language programming
3	Interface different on & off chip peripherals with 8051 using C language
4	Basics of 8051 can be used for robotic applications

Subject	Elective 3- SATELLITE COMMUNICATION
code	BEECE805T/ BEETE805T

Sr No.	Course Outcome
1	Do research with capabilities in the design, development and manufacture of satellite communication systems used in a wide spectrum of applications.
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
3	Able for Acquisition of technical competence in specialized areas of Satellite Communication engineering.
4	Able to identify, formulate and model problems and find Satellite Communication engineering solutions based on a system approach.

Subject	Elective 3- CMOS VLSI DESIGN
code	BEECE805T/ BEETE805T
Sr No.	Course Outcome

1	Design PMOS and NMOS transistor.
2	Implementation different combinational logic circuits.
3	Design layout for various circuits.
4	Design CMOS transistor.
5	Experiment on CMOS logic design

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Engineering Bhandara

Course Outcome
Department of Computer Engineering
BE 3rd Semester
Course Outcome

Subject:	MATHEMATICS-III(Theory)
Code:	BECME301T
Sr.No.	Course Outcome
BECME301T.1	Recall & use the Laplace transform to solve constant-coefficient differential equations with initial
BECME301T.2	Compute the Z-transform of a sequence and use to solve constant-coefficient difference equations with initial conditions.
BECME301T.3	Calculate Fourier Transforms for the variety of simple functions.
BECME301T.4	Shall be competent in solving linear PDEs using classical solution methods.
BECME301T.5	Shall be able to model and calculate random variables
BECME301T.6	Be able to differentiate between common type of data and use distributions.

Subject:	DIGITAL ELECTRONICS (Theory)
Code:	BECME302T
Sr.No.	Course Outcome
BECME302T.1	Student will be able to analyses analog as well as digital systems and familiar with logic gates.
BECME302T.2	Apply the basic knowledge related to design of Combinational Circuits and evaluate digital circuits of medium complexity, that are based on SSIs, MSIs and programmable logic devices.
BECME302T.3	Solve various type of K-map in SOP & POS form.

BECME302T.4	Apply the Basic Knowledge related to design of Sequential Circuits, Flip-Flop, Counters.
BECME302T.5	Apply the basic concept of logic gates and their use in sequential circuits.
BECME302T.6	At the end of the student will be able to design and Implement basic circuits required in computer system.

Subject:	CONCEPT IN COMPUTER ENGINEERING (Theory)
Code:	BECME303T
Sr.No.	Course Outcome
BECME303T.1	Basic concepts of input/output units and computer memory. It also gives the knowledge of Computer
BECME303T.2	Acquire basic knowledge about the history of computer with the help of their processor.
BECME303T.3	Basic idea of Computer languages, algorithms and flowchart.
BECME303T.4	To understand the Computer software's, Problem solving, Structuring the logic, using the computer.
BECME303T.5	Its provides Operating systems & open source technology.
BECME303T.6	Acquire knowledge of Multimedia data Acquaint and Processing.

Subject:	PROGRAMMING METHODOLOGY & DATA STRUCTURES
Code:	BECME304T
Sr.No.	Course Outcome
BECME304T.1	Understand the basics of computer programming, C language and their Functions.
BECME304T.2	Use appropriate data structures like arrays, Pointers to solve real world problems efficiently.

BECME304T.3	Illustrate and compare various techniques for searching, sorting and hashing.
BECME304T.4	Students will be able to use linear and non-linear data structures like stacks, queues etc.
BECME304T.5	Student will be able to handle operations like searching, insertion, deletion etc. on various data structures like Linked List..
BECME304T.6	Represent and manipulate data using nonlinear data structures like trees and graphs to design algorithms for various applications.

Subject:	INTRODUCTION TO COMPUTER NETWORK
Code:	BECME305T
Sr.No.	Course Outcome
BECME305T.1	Master the terminology concept of the OSI reference model model and TCP/IP reference model and protocols, design issues in LAN and WAN.
BECME305T.2	Explain physical layer functionality and its working along with transmission media with real time applications.
BECME305T.3	Describe the functions of data link layer and explain the protocols used in data link layer including various IEEE standards.
BECME305T.4	Classify the routing Algorithm and analyze how to map IP addresses. Identify the issues related to congestion control.
BECME305T.5	Have a good understanding of the transport layer including Reliable and Unreliable services and its policies.
BECME305T.6	Have a basic knowledge of the session layer, presentation layer, application layer, use of cryptography and network security

Subject:	DIGITAL ELECTRONICS (Practical)
Code:	BECME302P
Sr.No.	Course Outcome

BECME302P.1	Study of logic gates and realization of OR, AND, NOT AND XOR functions using universal gates.
BECME302P.2	Design and implement combinational circuits like half adder/full adder, half sub-tractor/full sub-tractor, code converters, comparators, MUX/DEMUX
BECME302P.3	Design and implement sequential circuits like flip-flops, counters and shift registers.
BECME302P.4	Study of 8-bit DAC and 8-bit ADC

Subject:	PROGRAMMING METHODOLOGY & DATA STRUCTURES (Practical)
Code:	BECME304P
Sr.No.	Course Outcome
BECME304P.1	To develop simple programs using various data structures.
BECME304P.2	Implement various basic data structures and its operations.
BECME304P.3	Implement various searching and sorting algorithms.
BECME304P.4	Implement various tree operations.
BECME304P.5	Implement various graphs algorithms.

Course Outcome
Department of Computer Engineering
BE 4th Semester
Course Outcome

Subject:	Discrete Mathematics & Graph Theory
Code:	BECME401T

Sr.No.	Course Outcome
BECME401T.1	Know grouping of objects and operation, Relation, ordering of objects.
BECME401T.2	Know grouping of objects and operation, Relation, ordering of objects.
BECME401T.3	Know Groups and Rings, their types and Applications.
BECME401T.4	Know Data structure used to represent different kinds of objects viz Graph, Trees.
BECME401T.5	Know the basics of combinatorial structure and develop algebraic technique to solve combinatorial problems.
BECME401T.6	Programming application of group, ring and number theory.

Subject:	File Structure & Data Processing
Code:	BECME402T
Sr.No.	Course Outcome
BECME402T.1	Students will know a software design course, which develops concepts and techniques for structuring and manipulating data both in the computer and on external storage devices.
BECME402T.2	Topics include a review of basic file structures including sequential and direct access files.
BECME402T.3	Acquire knowledge about data compression and introduction to internal sorting, searching, indexing etc.
BECME402T.4	Understand the concepts consequential processing and file merging.
BECME402T.5	Able to understand data structures multilevel indexing systems, b-trees is also introduced.
BECME402T.6	Students will be able to Understand the Hashing with their algorithm and functions.

Subject:	Microprocessor(T)
Code:	BECME403T
Sr.No.	Course Outcome
BECME403T.1	An ability to apply mathematical foundations, algorithmic principles and computer science theory in the modeling and design, computer based system in a way that demonstrates comprehension of the tradeoffs involve in design choices.
BECME403T.2	An ability to apply design and development principles in the construction and implementing 8086 Microprocessor, and its instruction set.
BECME403T.3	Understand of necessity of Instructions and programming for microprocessor.
BECME403T.4	Design an assembly language program using subroutines and the various stack related instructions with microprocessor 8086.
BECME403T.5	Interface different peripheral IC's with 8086 microprocessor by employing interfacing concepts.
BECME403T.6	Demonstrate the internal organization of microprocessor 8086 and explain the concept of interrupt and its uses.

Subject:	Numerical Computational Technique (theory)
Code:	BECME404T
Sr.No.	Course Outcome
BECME404T.1	To know appropriate numerical methods to solve algebraic and transcendental equations.
BECME404T.2	Develop appropriate numerical methods to approximate a function.
BECME404T.3	Develop appropriate numerical methods to solve a differential equation.
BECME404T.4	Derive appropriate numerical methods to evaluate a derivative at a value.
BECME404T.5	To Understand the concepts of regression and correlation.

BECME404T.6	Determine the test of significance by introducing the x2-test, the t-test and the F-test.
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Subject:	Object Oriented Methodology(Theory)
Code:	BECME405T
Sr.No.	Course Outcome
BECME405T.1	Understand the object oriented concepts like object, class, inheritance, aggregation.
BECME405T.2	Able to know the state diagram, dynamic modeling, data flow diagrams, specifying operations.
BECME405T.3	Acquire Knowledge about the dynamic modeling and object modeling with the help of their various phases.
BECME405T.4	Able to design and implementation of system design and handling boundary conditions.
BECME405T.5	Gaining knowledge about object design, design optimization, physical packaging, design decisions.
BECME405T.6	Understand comparisons of methodologies, programming languages, database systems, reusability, extensibility, robustness.

Subject:	Computer Lab-II
Code:	BECME406P
Sr.No.	Course Outcome
BECME406P.1	Code and compile COBOL programs with no syntax errors.
BECME406P.2	Use coding techniques commonly used to solve routine business problems.
BECME406P.3	Analyze program specifications and design accurate and efficient COBOL programs to meet those specifications.

Subject	MICROPROCESSOR (Practical)
code	BECME403P
Sr No.	Course Outcome
BECME403P.1	Make use of the microprocessor trainer kit to execute 8085 programs.
BECME403P.2	Develop assembly language program for 8085 to solve simple programs.
BECME403P.3	Make use of interfacing devices for a specified application.
BECME403P.4	Develop simple assembly language program for 8086.
BECME403P.5	Develop assembly language program for 8086 using BIOS/DOS Calls

Subject	OBJECT ORIENTED METHODOLOGY (Practical)
code	BECME405P
Sr No.	Course Outcome
BECME405P.1	Define basic terms necessary for modeling computer systems.
BECME405P.2	Collect requirements and prepare their scenarios.
BECME405P.3	Prepare diagrams by UML.
BECME405P.4	Prepare and use of design patterns.
BECME405P.5	Prepare supporting documentation.

Course Outcome
Department of Computer Engineering
BE 5th Semester
Course Outcome

Subject:	Theory of Computation
Code:	BECME501T
Sr.No.	Course Outcome
BECME501T.1	Understand Finite State Systems, Properties and limitations of Finite State machines, Basic Definitions, Non-Deterministic finite automata (NFA).
BECME501T.2	Define Regular Expressions, Identities, Regular languages and finite automata, Arden theorem: Equivalence of finite automata and Regular Expressions.
BECME501T.3	Able to understand Context free and Context sensitive grammar, Parse trees, Ambiguity in CFG and analyze design of PDM.

BECME501T.4	Analyze Deterministic and Non- Deterministic Turing Machines, Design of TM, Universal TM, Permutations and Combinations.
BECME501T.5	Able to Find the various solutions of Recursive, non-recursive languages and Halting problem etc.
BECME501T.6	Understand the concept of Recursive functions and μ -recursive function.

Subject:	Computer Architecture and Organization
Code:	BECME502T
Sr.No.	Course Outcome
BECME502T.1	Recognize the central ideas underlying the discipline of computer system. Ability to calculate arithmetic and floating point values.
BECME502T.2	Explain and Compare the representation of data, addressing modes, instructions sets for a computer system.
BECME502T.3	Discuss the issues and design tradeoffs in designing computer architecture and components.
BECME502T.4	Apply the knowledge of Cache memory to increase the performance of Computer System.
BECME502T.5	Understand the concept of I/O system, parallel, standard Interface and mechanism of peripherals.
BECME502T.6	Justify the knowledge of pipelined, superscalar, and RISC/CISC architectures. Choose recent technologies in computer architecture.

Subject:	TCP/IP and Internet
Code:	BECME503T
Sr.No.	Course Outcome
BECME503T.1	Study the comparison of OSI & TCP/IP models, networking concept and architecture model.

BECME503T.2	Ability to understand the Internet protocols with the help of IP Packets and Addressing concepts.
BECME503T.3	Wire shark to identify ICMP request and routing protocols.
BECME503T.4	Ability to describe how basic routing works including the use of routing protocols for mobile IP.
BECME503T.5	Subnets using IP classes B and C about TCP/IP protocols, sockets, and data encapsulation. Describe the process of packet fragmentation and reassembly, able to explain the key features and functions of TCP and UDP.
BECME503T.6	Ability to explain DNS queries, name resolution, zone data transfers, reverse DNS queries and the DHCP discovery process.

Subject:	Computer Graphics
Code:	BECME504T
Sr.No.	Course Outcome
BECME504T.1	Understand the basics of computer graphics, different graphics systems and applications of computer graphics.
BECME504T.2	Discuss various algorithms for scan conversion and filling of basic objects and their comparative analysis.
BECME504T.3	Analyze and apply clipping algorithms and transformation on 2D images.
BECME504T.4	Discuss OpenGL application programming Interface and apply it for 2D & 3D computer graphics.
BECME504T.5	Solve the problems on viewing transformations and explain the projection and hidden surface removal algorithms.
BECME504T.6	Acquire Knowledge about animation, color model and color Application with the use of their properties and design.

Subject:	Industrial Economics & Entrepreneurship Development
Code:	BECME505T

Sr.No.	Course Outcome
BECME505T.1	Be able to explain how a business as well as leadership, organizing, strategic planning and management control functions in an industrial organization.
BECME505T.2	Be able to understand market structure, pricing strategies in that situation and business cycle.
BECME505T.3	Be able to understand functions of central & commercial banks , FDI and relationship between public & private firm in business
BECME505T.4	Be able to understand significance of entrepreneurship, economic growth and application of engineering skills entrepreneurial activities.
BECME505T.5	Be able to understand sources of finance in industry, financial institutions & methods of taxation and tax benefits.
BECME505T.6	Be able to understand small scale industries, its sickness, technical consultancy organizations for SSI and Government policies for small scale enterprises.

Subject:	Computer lab-III(P)
Code:	BECME506P
Sr.No.	Course Outcome
BECME506P.1	Identify classes, objects, members of a class and the relationships among them for a specific problem.
BECME506P.2	Develop GUI applications to handle events.
BECME506P.3	Develop client server based applications.
BECME506P.4	Design, develop, test and debug Java programs using object-oriented principles in conjunction with development tools including integrated development environments.

Subject	TCP/IP AND INTERNET (Practical)
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code	BECME503P
Sr No.	Course Outcome
BECME503P.1	Develop knowledge to implement client server applications.
BECME503P.2	Develop skills in UNIX socket programming.
BECME503P.3	Develop skills to use simulation tools.
BECME503P.4	Analyze the performance of network protocols.
BECME503P.5	Analyze the network traffic

Subject	COMPUTER GRAPHICS (Practical)
code	BECME504P
Sr No.	Course Outcome
BECME504P.1	Explain the working of Input and Output devices for graphics.
BECME504P.2	Explain about graphics primitives and work with coordinate spaces, co-ordinate conversion, and transformations of graphics objects.
BECME504P.3	Demonstrate 2D & 3D geometrical transformations using modern tools.
BECME504P.4	Explain various 3D projections and current models for surfaces.
BECME504P.5	Make use of the color and transformation techniques for various applications.

Course Outcome
Department of Computer Engineering
BE 6th Semester
Course Outcome

Subject:	System Software
Code:	BECME601T
Sr.No.	Course Outcome
BECME601T.1	Describe the various data structures and passes of assembler design.
BECME601T.2	Identify the need for different features and designing of macros.
BECME601T.3	Distinguish different loaders and linkers and their contribution in developing efficient user applications.
BECME601T.4	Grab the concepts of phases of compiler, LEX and YACC.
BECME601T.5	Understand and implement the concept of Unix device drivers and Comparative study between device drivers for Unix and Windows.
BECME601T.6	Understand the concept of case study of Inten@64 and IA-32 Processors with the help of its architecture and basic execution environment.

Subject:	Design and Analysis of Algorithm
Code:	BECME602T
Sr.No.	Course Outcome
BECME602T.1	Analyze and compare complexity for different types of algorithms for different types of problems and apply mathematical preliminaries to the analyses and design stages of different types of algorithms.
BECME602T.2	Define the basic concept of algorithm and analyze the asymptotic performance of algorithms.
BECME602T.3	Derive and solve recurrences describing the performance of divide and Conquer algorithms and Find optimal solution by applying greedy approach.
BECME602T.4	Find optimal solution by applying dynamic approach.
BECME602T.5	To understand the basic traversal and search Techniques also explain the Backtracking strategy and Hamiltonian cycles.
BECME602T.6	understand and define the NP-hard and NP-complete problem. explain the significance of NP-completeness.

Subject:	Database Management System
Code:	BECME603T

Sr.No.	Course Outcome
BECME603T.1	Ability to understand basic concept, physical structure and architecture of the database to handle data.
BECME603T.2	Students would be able to construct queries using SQL and to write relational algebra expression for queries.
BECME603T.3	Ability to normalize the database and to become familiar with basic database storage structure and access techniques.
BECME603T.4	Study query processing and Perform optimization on query processing.
BECME603T.5	Students would clearly understand the transaction processing system and Concurrency control .
BECME603T.6	Study and Implement Distributed databases which are used real time system.

Subject:	Software Engineering and Project Management
Code:	BECME604T
Sr.No.	Course Outcome
BECME604T.1	Identify and adopt the life cycle of software development process.
BECME604T.2	Demonstrate, evaluate and interpret the information sources for the development of software systems.
BECME604T.3	Interpret and be familiar with the role and responsibilities of the professional software's & ethics to adopt and solve software engineering product development related problems.
BECME604T.4	Design and analyze the skills to solve problems and provide their solutions using appropriate methods of analysis and design.
BECME604T.5	Design different testing mechanisms for achieving quality control and quality assurance for large scale software systems.
BECME604T.6	Evaluate and apply appropriate cost estimations techniques for development of software

Subject:	Functional English
Code:	BECME605T
Sr.No.	Course Outcome
BECME605T.1	To build the self-confidence to face competitive examinations like GATE/TOFEL/CAT/MAT etc.
BECME605T.2	To use the functional grammar to strengthen their writing skills.

BECME605T.3	To acquire language skills required to write their Reviews/ Projects/Reports.
BECME605T.4	To organize their thoughts in English in research and projects activities also face job interviews more confidentially.

Subject:	Mini-Project & Industrial Visit
Code:	BECME606P
Sr.No.	Course Outcome
BECME606P.1	Acquire practical knowledge within the chosen area of technology for project development
BECME606P.2	Identify, analyze, formulate and handle programming projects with a comprehensive and systematic
BECME606P.3	Contribute as an individual or in a team in development of technical projects
BECME606P.4	Develop effective communication skills for presentation of project related activities
BECME606P.5	Prepare a documentation on developed project
BECME606P.6	Understand the conferences & Journals paper Format

Subject	SOFTWARE ENGINEERING & PROJECT MANAGEMNET (Practical)
code	BECME604P
Sr No.	Course Outcome
BECME604P.1	Identify project requirements, author a formal specification, estimate and schedule tasks involved in project development.
BECME604P.2	Apply design principles during development of system.
BECME604P.3	Ensure quality of software by implementing testing methods.

Subject	DATABASE MANAGEMENT SYSTEM (Practical)
code	BECME603P
Sr No.	Course Outcome
BECME603P.1	Acquire knowledge of handling large volume of data
BECME603P.2	Acquire skills to deal with Real life database implementation.
BECME603P.3	Response off faster queries and serve as many users as possible concurrently.
BECME603P.4	Fit with any Database project in industry after completion of degree.

Subject	DESIGN AND ANALYSIS OF ALGORITHMS (Practical)
code	BECME602P
Sr No.	Course Outcome
BECME602P.1	Identify the problem given and design the algorithm using various algorithm design techniques.
BECME602P.2	Implement various algorithms in a high level language.
BECME602P.3	Analyze the performance of various algorithms.
BECME602P.4	Compare the performance of different algorithms for same problem.

Course Outcome
Department of Computer Engineering
BE 7th Semester
Course Outcome

Subject:	OPERATING SYSTEM (Theory)
Code:	BECME701T
Sr.No.	Course Outcome
BECME701T.1	Understand process concept and process scheduling.
BECME701T.2	To understand the process management policies and scheduling of processes by CPU.

BECME701T.3	To evaluate the requirement for process synchronization and coordination handled by operating system.
BECME701T.4	Describe system model for deadlock. Methods for handling deadlocks and memory management strategies.
BECME701T.5	To describe and analyze the memory management and its allocation policies.
BECME701T.6	To identify use and evaluate the System Security with respect to different Implementing Security Defenses and also understand the concept of System Protection.

Subject:	ADVANCED MICROPROCESSORS & MICROCONTROLLERS
Code:	BECME702T
Sr.No.	Course Outcome
BECME702T .1	An ability to apply mathematical foundations, algorithmic principles and computer science theory in the modeling and design, computer based system in a way that demonstrates comprehension of the tradeoffs involve in design choices.

BECME702T.2	An ability to apply design and development principles in the construction of software systems of varying complexity.
BECME702T.3	An ability to use techniques, skills and modern engineering tools necessary for engineering practice, and an ability to communicate effectively.
BECME702T.4	Understand of necessity of Instructions & programming for microprocessor.
BECME702T.5	Design and implement 8051 microcontroller-based systems for various applications
BECME702T .6	Design and implement advanced processor/controllers-based systems for various Section.

Subject:	INFORMATION ASSURANCE AND NETWORK SECURITY (Theory)
Code:	BECME703T
Sr.No.	Course Outcome

BECME703T.1	Understand various terms related to security, encryption and decryption algorithm, way to choose suitable ciphering algorithms according to the required security level, security goals and its applications.
BECME703T.2	Use and cryptanalysis of various basics and modern encryption, integrity providing algorithm.
BECME703T.3	Use different arithmetic operations in order to get security at various point in the network, algorithm for authentication and access control.
BECME703T .4	Understand various protocols which provide security at various layers during communication and issues related to security to operating system, database and programe and their solutions.
BECME703T .5	Judge web security, Network security, virus, worms and firewall by studying various network layers and the supportive protocols at each network layer.
BECME703T .6	Identify the basic concept of Investigate Cyber Crimes analysis attack by studying various Tools, tracing and recovering electronic evidence from Indian IT laws.

Subject:	DATA WAREHOUSING & MINING (Theory)
Code:	BECME704T(iii)

Sr.No.	Course Outcome
BECME704T(iii).1	To understand the concept of Data Mining, Data Warehouse and Data Marts.
BECME704T(iii).2	Explore architecture of Data warehouse and different OLAP operations.
BECME704T(iii).3	Identify Associations in large databases using different techniques.
BECME704T(iii).4	Understand data mining functionalities and major issues and challenges in data mining.
BECME704T(iii).5	Analyze how data mining techniques can be applied to complex data objects like spatial data and web mining.
BECME704T(iii).6	Differentiate various classification and clustering techniques.

Subject:	WEB TECHNOLOGIES (Theory)
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Code:	BECME705T(ii)
Sr.No.	Course Outcome
BECME705T(ii).1	To understand XML, XHTML, XSL, Dynamic & Static Contents .Further to understand server Security concept
BECME705T(ii).2	To understand the Concepts of JavaScript, AJAX, & clickable maps.
BECME705T(ii).3	Understand difference between client side and server side scripting, the basics of JavaScript, Event Handling.
BECME705T(ii).4	Understand the basics of representing web data and the concepts of DOM etc.
BECME705T(ii).5	Learn the working of internet terminologies like searching fundamentals and its types on internet, Email, FTP, Web services & Feeds etc.
BECME705T(ii).6	Understand topics such as cookies, hidden fields etc. and various server side technologies like ASP/JSP, the concept of forms and its processing, input output operations on WWW and basics of delivering multimedia over web.

Subject:	SEMINAR ON PROJECT (Practical)
Code:	BECME706P
Sr.No.	Course Outcome
BECME706P.1	Deliver effective presentations in contexts that may require power point, extemporaneous or impromptu
BECME706P.2	Demonstrate both oral and written work in a grammatically accurate and rhetorically engaging style.
BECME706P.3	Conceive, arrange, and articulate ideas logically and clearly.
BECME706P.4	Design and develop Technical reports.

Subject	ADVANCED MICROPROCESSORS & MICROCONTROLLERS (Practical)
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Code :	BECME702P
Sr.No	Course Outcome
BECME702P.1	State the internal organization of some popular microprocessors (8086, 8088)/microcontrollers (8051, PIC).
BECME702P.2	Understand the impact of microprocessor based system in process of automation.
BECME702P.3	Apply knowledge of soft skill and other resources to design automated system with programing module
BECME702P.4	Discriminate the performance of pipe-lining (8086) and non-pipe-lining (8085) architecture microprocessor
BECME702P.5	Conduct experiments for real time data collection by microprocessor based data acquisition system.
BECME702P.6	Design interfacing circuits of various devices with the microprocessor and microcontroller.

Subject	INFORMATION ASSURANCE AND NETWORK SECURITY (Practical)
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Code :	BECME703P
Sr.No	Course Outcome
BECME703P.1	Understand the fundamental principles of access control models and techniques, authentication and secure system design.
BECME703P.2	Have a strong understanding of different cryptographic protocols and techniques and be able to use them.
BECME703P.3	Apply methods for authentication, access control, intrusion detection and prevention.
BECME703P.4	Identify and mitigate software security vulnerabilities in existing systems.

Course Outcome
Department of Computer Engineering
BE 8th Semester
Course Outcome

Subject:	UNIX & SHELL PROGRAMMING (Theory)
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Code:	BECME801T
Sr.No.	Course Outcome
BECME801T.1	Understand basic concepts of UNIX Operating System, its kernel and different subsystems of kernel, types of shells.
BECME801T.2	Understand process Control subsystem, its State diagram, types of scheduling and memory management policies.
BECME801T .3	Acquire Knowledge about internal representation of files, directories and other file type.
BECME801T.4	Execute various types of commands on the standard shell viz. basic commands, directory and file related, pipe and filter related, process related, user communication related and the system administration related commands
BECME801T .5	Understand how to work on the standard editor and write shell scripts using this
BECME801T.6	Understand about wireless communication network, network connection of various operating system like, LINUX version.

Subject:	DISTRIBUTED SYSTEMS AND GRID COMPUTING (Theory)
Code:	BECME802T
Sr.No.	Course Outcome
BECME802T.1	To gain a clear understanding of the concepts that underlie distributed computing systems along with characteristics, design and implementation issues.
BECME802T.2	To learn Time and Global states, Distributed debugging and Distributed Mutual Exclusion.
BECME802T.3	To learn design issues of file systems, Design and implementation issues of distributed shared memory, CORBA Model.
BECME802T.4	Learn various Grid Computing Models & Protocols .
BECME802T.5	To Understand about Message Passing Interface (MPI) standards.
BECME802T.6	To Understand about Cloud Computing Models, Service Models, Deployment Model & Cloud Architecture.

Subject:	WIRELESS COMMUNICATION & MOBILE COMPUTING (Theory)
Code:	BECME803T(i)
Sr.No.	Course Outcome
BECME803T(i).1	Understand the basics wireless communication networks, knowledge about System design and fundamentals, cellular communication as hexagonal cell geometry co channel interface, cellular system design, sectoring using directional antennas and different spread spectrum techniques and the basic principles channel allocation and Handoffs.
BECME803T(i).2	Gain knowledge GSM cellular concept along with cellular systems from 1G TO 3G,wireless 4G systems and awareness of the technologies using TDMA ,CDMA and how intelligent cell concept is use full in in-building -communication. Mobile technologies and its computing techniques.
BECME803T(i).3	Have an understanding of Mobile network and Mobility models.
BECME803T(i).4	Acquire Knowledge about the Mobile Network Layer and Mobile Transport Layer.
BECME803T(i).5	Ability to Understand the security issue and face the challenges about the mobile network security.

BECME803T(i).6	Acquire Knowledge about the Protocols and Tools of WAP, Bluetooth and networking Security.
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Subject:	MULTIMEDIA SYSTEM (Theory)
Code:	BECME804T(iii)
Sr.No.	Course Outcome
BECME804T(iii) .1	This course is designed to develop fundamental concepts of applications of multimedia and their types.
BECME804T(iii) .2	Use composite geometric transformations on original and clipped graphics objects in multimedia in 2D and 3D.
BECME804T(iii) .3	Explore projections and visible surface detection techniques for display of 3D scene on 2D screen.
BECME804T(iii).4	Understand the techniques for improving the object appearance with the help of clipping objects outside the view and filling relevant parts of the area.

BECME804T(iii) .5	Acquire the knowledge about Data and File format Standards Using Popular file Formats and Database Management systems.
BECME804T(iii) .6	Use multimedia skills to designing the structure and producing Multimedia for web.

Subject	UNIX & SHELL PROGRAMMING (Practical)
Code :	BECME801P
Sr.No	Course Outcome
BECME801P.1	able to run various UNIX commands on a standard UNIX/LINUX Operating system (We will be using Ubuntu flavor of the Linux operating system).
BECME801P.2	able to run C / C++ programs on UNIX.
BECME801P.3	able to do shell programming on UNIX OS.

BECME801P.4	Able to understand and handle UNIX system calls.
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Subject	DISTRIBUTED SYSTEMS AND GRID COMPUTING (Practical)
Code :	BECME802P
Sr.No	Course Outcome
BECME802P.1	To understand and explore the concepts client server communication in distributed system.
BECME802P.2	To understand and explore the concepts with programming of RPC mechanism.
BECME802P.3	To demonstrate the general concepts on Cloud computing and grid computing.
BECME802P.4	To make use of the Cloud Toolkit.

Subject	PROJECT (Practical)
Code :	BECME805P
Sr.No	Course Outcome
BECME805P.1	Demonstrate both oral and written work in a grammatically accurate and rhetorically engaging style.
BECME805P.2	Demonstration of Project Implementation developed in different programming Languages
BECME805P.3	To publish research work on reputed Journals & conferences.


 H.O.D.
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 Madhukarrao Pandav College of
 Engineering, Bhitwada, Bhandara.

Madhukarrao Pandav College Of Engineering Bhilewada, Bhandara
Department Of Electrical Engineering
3rd Semester BE
Course Outcome

Name of Course:	MATHEMATICS III
Course code:	BEELE301T
Sr. No.	Course Outcomes
CO301T.1	Explain the concept of Laplace transform & can apply to solve D.E and integral equation.
CO301T.2	Evaluate Fourier series and Fourier transform of function in different interval.
CO301T.3	Evaluate extremal of functional using Euler's equation.
CO301T.4	Identify analytic function & can apply Cauchy integral formula or residue theorem to solve complex integral.
CO301T.5	Solve P.D.E and apply it for initial value problems and boundary value problems
CO301T.6	Extend the concept of matrices to eigen value & eigen vector and use it to solve various engineering problems.

Name of Course:	NON-CONVENTIONAL ENERGY SOURCE
Course code:	BEELE302T
Sr. No.	Course Outcomes
CO302T.1	Understand the fundamentals of solar radiation geometry & its measurement.
CO302T.2	Understand the principles of different solar energy collectors and energy storage.
CO302T.3	Explain various application of solar energy.
CO302T.4	Understand the basic principle, components and classification of WECS.
CO302T.5	Understand the concept of electricity generation through OTEC, Tidal and wave.

C0302T.6	Understand the working of various non conventional energy sources.
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Name of Course:	Electrical Measurement and Instrumentation
Course code:	BEELE303T
Sr. No.	Course Outcomes
C0303T.1	Measure the resistances, inductance and capacitance using different bridges.
C0303T.2	Explain the different electrical instrument used for electrical measurement.
C0303T.3	Measure power and energy in polyphase circuit.
C0303T.4	Explain the details & use of CT, PT and errors.

CO303T.5	Explain static and dynamic characteristics of instrument and block diagram of data acquisition system.
CO303T.6	Know the transducer and Measure force, torque, velocity, acceleration, temperature, pressure and flow using different instrument.

Name of Course:	Network Analysis
Course code:	BEELE304T
Sr. No.	Course Outcomes
CO304T.1	Apply the knowledge of source transformation and kirchhoff's voltage law for the analysis of electrical networks.
CO304T.2	Apply the knowledge of kirchhoff's current law for the analysis of electrical circuits and construction of dual networks.
CO304T.3	Apply various networks theorem for analysis of electrical circuits.

CO304T.4	Evaluate the initial conditions using knowledge of Laplace transformation. Analysis and synthesis of various waveforms.
CO304T.5	Understand transient behavior and network functions with computation of network functions for
CO304T.6	Apply the knowledge of resonance for series and parallel circuits, calculation of various electrical quantities for 3 phase circuits and evaluation of two port parameters.

Name of Course:	Electronic devices and circuit
Course code:	BEELE305T
Sr. No.	Course Outcomes
CO305T.1	Define and explain the principle and working of basic semiconductor devices,rectifier
CO305T.2	Identify and examine the transistor characteristics and biasing arrangement

CO305T.3	Classify various power amplifiers and define the positive and negative amplifier
CO305T.4	Illustrate the FET and MOSFET devices and also define and interpret various oscillators
CO305T.5	Summarize and relate the various differential circuits and their stages
CO305T.6	Translate the conversion of numbers from one code to other code and classify various logic gates and truth tables of digital circuits

Name of Course:	Electrical Measurement and Instrumentation(PRAC)
Course code:	BEELE303P
Sr. No.	Course Outcomes
CO303P.1	calibrate various electrical measuring instruments & measure power & energy.

CO303P.2	Measure resistance, inductance and capacitance using bridges
CO303P.3	Understand the working of LVDT

Name of Course:	Network Analysis(pract)
Course code:	BEELE304P
Sr. No.	Course Outcomes
CO304P.1	Verify different network theorems as applicable to electric circuits.
CO304P.2	Measure AC Power & Verify the relation between Line and Phase values of Voltage & Current for Three Phase Star & Delta Connected System
CO304P.3	Compute various network parameters.

Name of Course:	Electronic dvice and circuit(PRAC)
Course code:	BEELE305P
Sr. No.	Course Outcomes
CO305P.1	Evaluate and analyse the characteristics of diodes and transistors
CO305P.2	Evaluate and analyse the Half & Full Wave Rectifier.
CO305P.3	Classify name and make use of various logic gates and boolean algebra

Madhukarrao Pandav College Of Engineering Bhilewada, Bhandara
Department Of Electrical Engineering
4th Semester BE
Course Outcome

Name of Course:	M4
Course code:	BEELE401T
Sr. No.	Course Outcomes
CO401T.1	Apply the concept of laplace transform to find Transfer function for Mathematical modelling
CO401T.2	Apply the concept of Z-transform and use it to solve differential equation
CO401T.3	Explain the basic concept of fuzzy sets & fuzzy logic.
CO401T.4	Evaluate numerical solution of simultaneous and algebraic equation
CO401T.5	Evaluate numerical solution of differential equation
CO401T.6	Extend the concept of probability to find Distribution and Expectation

Name of Course:	ELEMENTS OF ELECTROMAGNETISM
Course code:	BEELE402T
Sr. No.	Course Outcomes
CO402T.1	Compare and Describe the concept of Cartesian, cylindrical and spherical coordinate systems
CO402T.2	Explain the coulomb's law and Apply its concepts the analysis of electromagnetic & electrostatic system
CO402T.3	Explain the gauss's law and Apply its concepts the analysis of electromagnetic & electrostatic system
CO402T.4	Utilize the physical basis and apply the concepts for the functioning of conductors, dielectrics and capacitance in electromagnetic & electrostatic circuits
CO402T.5	Explain the concepts of magnetic field and magnetic forces and Analyze various electromagnetic boundary conditions.
CO402T.6	Remember Maxwell's equations used to study electromagnetic fields and Illustrate the concept of uniform plane-wave propagation and electromagnetic power density flow in lossless medium

Name of Course:	DLEC
Course code:	BEELE403T
Sr. No.	Course Outcomes
CO403T.1	Explain the basic concepts of digital electronics.
CO403T.2	Identify, analyze and design combinational and logical circuits
CO403T.3	Design various synchronous and asynchronous sequential circuits
CO403T.4	Interpret the terminal characteristics of Op-Amps, analyze and design fundamental circuits based on Op-Amps
CO403T.5	Analyze feedback and its effect on the performance of Op-Amp.
CO403T.6	Analyze and design linear and non-linear applications of Op-Amps.

Name of Course:	Computer programming
Course code:	BEELE405T
Sr. No.	Course Outcomes
CO405T.1	Explain structure of 'C' program, data types, storage class, variable, expression, operators & functions.
CO405T.2	Classify use of arrays & sorting techniques
CO405T.3	Interpret the use of Pointer, Structure & file handling
CO405T.4	Explain Basic Concepts of C++
CO405T.5	Explain introductory tools of MATLAB programming
CO405T.6	Make use of MATLAB functions for simple tasks on matrix operation, graphics, file handling.

Name of Course:	ELECTRICAL MACHINES-I
Course code:	BEELE404T
C404T.1	Discuss the features and operation of 1-Phase & 3-phase transformer to determine the equivalent circuit parameters, Regulation, Efficiency and vector grouping of 3-phase transformer.
C404T.2	Illustrate the Conversion of 3-phase to 2- phase supply, parallel operation and maintenance of 3-phase transformer.
C404T.3	Analyze the D.C. Machines
C404T.4	Understand and Illustrate the 3-ph Induction Motor
C404T.5	Determine the Starting, Breaking and speed control of three phase induction motor

C404T.6	<p>Understand the Construction and principal of operation of double cage induction motor,</p> <p>induction generator, and types of single phase induction motors.</p>
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Name of Course:	Electrical Machines - I (practical)
Course code:	BEELE404P
Sr. no	Course Outcomes
C0404P.1	Connect the circuit to perform experiments, measure, analyze the observed data & come to a conclusion
C0404P.2	Organize reports based on performed experiments with effective demonstration of diagrams and characteristics /graph
C0404P.3	Demonstrate the starting & speed control of various AC & DC motors
C0404P.4	Perform various tests, find efficiency & voltage regulation of electrical machines

Name of Course:	DIGITAL & LINEAR ELECTRONIC CIRCUIT Lab
Course code:	BEELE403P
Sr. no	Course Outcomes
CO403P.1	The ability to understand, analyze and design various combinational and sequential circuits
CO403P.2	Design op-amp circuits to perform arithmetic operations.
CO403P.3	Analyze and design oscillators and filters using functional Ics

Name of Course:	Computer programming (practical)
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Course code:	BEELE405P
Sr. no	Course Outcomes
C0405P.1	Explain structure of 'C' program and construct programs using variables of different data types
C0405P.2	Construct programs displaying the application of decision control structures
C0405P.3	Explain and show the working of sorting techniques through arrays
C0405P.4	Construct programs in MATLAB for conditional and iterative statements, matrix operations and graphic tools

Name of Course:	ENVIRONMENTAL STUDIES
Course code:	BEELE406T
Sr.No.	Course Outcomes

CO406T.1	Explain and demonstrate the scope and importance of Environmental Studies and natural resources for sustainable development.
CO406T.2	Recognize structure and functions of an ecosystem & various energy cycles to protect the environment.
CO406T.3	Explain different levels and conservation of biodiversity in environment.
CO406T.4	Apply problem-solving skills to reduce different types of pollutions
CO406T.5	Elaborate about sustainable development, Environment Legislations and human health.

Madhukarrao Pandav College Of Engineering Bhilewada, Bhandara
Department Of Electrical Engineering
5th Semester BE
Course Outcome

Name of Course:	Electrical POWER SYSTEM-I
Course code:	BEELE501T
Sr. No.	Course Outcomes

C0501T.1	Demonstrate details about generation, transmission & distribution of electrical power
C0501T.2	Determine Per unit values of different electrical parameters
C0501T.3	Modeling and representation of the system components used in power system and Make use of concept of feeders, distributors, cables, insulator
C0501T.4	Analyze & design parameters of transmission line
C0501T.5	Illustrate the basic concept of load flow analysis
C0501T.6	Illustrate elementary concept of real & reactive power control , automatic voltage regulator

Name of Course:	Utilisation Of Electrical Energy
Course code:	BEELE502T
Sr. No.	Course Outcomes

C0502T.1	Explain types & methods of electrical Heating & application of electric heating equipments
C0502T.2	Explain types of electric welding and their application.
C0502T.3	Explain terms used in illumination, different types of lighting schemes & energy saving in lighting systems.
C0502T.4	Explain terminologies, types & applications of refrigeration systems, different types of Air conditioning system
C0502T.5	List types of fans, blowers and their applications
C0502T.6	Classify types of compressors, DG Set and their applications

Name of Course:	Electrical Machine Design
Course code:	BEELE503T
Sr. No.	Course Outcomes

C0503T.1	Classify & select proper material for the design of an electrical machine
C0503T.2	Design overall transformer.
C0503T.3	Estimate the performance characteristics of Transformer with the constraints specified.
C0503T.4	Design Stator core & stator winding of an Induction motor.
C0503T.5	Design rotor core & rotor winding of an induction motor & calculate load current & other performance characteristics
C0503T.6	Design overall dimensions of synchronous machine & cooling of synchronous generator

Name of Course:	Micro-processor & Interfacing
Course code:	BEELE504T

Sr. No.	Course Outcomes
C0504T.1	Recall VLSI circuit concept and organization of computer with microprocessor unit
C0504T.2	Outline the architecture description, software instructions & various addressing modes of 8085
C0504T.3	Make use of software instructions to develop simple stack related programs
C0504T.4	Understand interrupts-concepts and structure in 8085 and construct simple programs using advanced instructions
C0504T.5	Explain the methods of data transfer, IN/OUT instructions and develop simple hardware interface to 8085
C0504T.6	Understand the hardware considerations and general awareness about microcomputer system related products

Name of Course:	Electrical Machines – II
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Course code:	BEELE505T
Sr.No.	Course Outcomes
C0505T.1	Illustrate constructional features of synchronous machines, winding details, induce EMF
C0505T.2	Develop phasor diagram & examine steady state performance of synchronous machines, determine voltage regulation of an alternator
C0505T.3	Interpret parallel operation of alternators & determine various sequence reactances of synchronous machines
C0505T.4	Analyze the behavior of synchronous machine connected to infinite bus
C0505T.5	Explain transient behavior of synchronous machines & determination of time constant and equivalent circuit parameters under transient conditions
C0505T.6	Explain working principle of special machines

Name of Course:	Electrical Machine-II(pract)
Course code:	BEELE505P
Sr.No.	Course Outcomes
C0505P.1	Verify the theory and working of electrical machines
C0505P.2	Determine the different parameters of Synchronous Machine, Make circuit diagram connections to perform experiments to observed data
C0505P.3	Determine the different parameters of a three-phase alternator and its regulation o.c & s.c test
C0505P.4	Determine the different parameters of a three-phase synchronous motor as well as its 'V' and 'inverted V' curves
C0505P.5	Explain the working of a Universal motor

Name of Course:	Microprocessor & Interfacing
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Course code:	BEELE504P
Sr.No	Course Outcomes
C0504P.1	Describe architecture, programming and Interfacing of peripheral IC's with 8085 Microprocessor.
C0504P.2	Translate the knowledge of programming in to developing basic data transfer related programs.
C0504P.3	Translate the knowledge of programming into developing basic arithmetic operations related programs.
C0504P.4	Translate the knowledge of programming into developing basic array related programs.

Name of Course:	EDS
Course code:	BEELE506P
Sr.No.	Course Outcomes

C0506P.1	Make use of various electrical circuit and model by using MATLAB
C0506P.2	Demonstrate the different aspects of the components of electrical systems by using MATLAB, PSCAD
C0506P.3	Develop single line diagram of Electrical layout in industry/office/house

Name of Course:	Electrical Engineering Workshop
Course code:	BEELE507P
C0507P.1	Identify various symbols used in electrical engineering and construct single line diagrams of a power systems.
C0507P.2	Analyze of load survey of electrical energy consumption and Study about Safty devices of Electrical engg
C0507P.3	Study and estimate various scheme of illumination
C0507P.4	Design, fabricate and carry-out performance analysis of 1- phase transformers for given ratings.

C0507P.5	Estimate various designing parameters of three phase induction motor
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Madhukarrao Pandav College Of Engineering Bhilewada,Bhandara

Department Of Electrical Engineering

6th Semester BE

Course Outcome

Name of Course:	Power station practice
Course code:	BEELE601T
Sr. No.	Course Outcomes
C0601T.1	Describe different sources of energy & various factors of electrical power station
C0601T.2	Demonstrate principle, construction, types, working of thermal power plant
C0601T.3	Explain complete information about working of Hydropower plant
C0601T.4	Get the Importance of Nuclear power plant and can Explain its working

C0601T.5	Evaluate the tariff for different customer
C0601T.6	Illustrate the basic concepts of co-generation ,captive power generation & sustainable development of energy

Name of Course:	Engineering Economics & Industrial Management
Course code:	BEELE602T
Sr. No.	Course Outcomes
C0602T.1	Understand the law of demand and factors of production
C0602T.2	Students will be familiar with market competition and price determination
C0602T.3	Understand the functions of banks and taxes.
C0602T.4	Students will be aware of management skills at professional level.

C0602T.5	Students will get acquainted with knowledge of marketing strategies
C0602T.6	Students will understand balance sheet and ratio analysis.

Name of Course:	Electrcial Drives & Their Control
Course code:	BEELE603T
Sr. No.	Course Outcomes
C0603T.1	Understand the law of demand and factors of production
C0603T.2	Students will be familiar with market competition and price determination
C0603T.3	Understand the functions of banks and taxes.

C0603T.4	Students will be aware of management skills at professional level.
C0603T.5	Students will get acquainted with knowledge of marketing strategies
C0603T.6	Students will understand balance sheet and ratio analysis.

Name of Course:	Power Electronics
Course code:	BEELE604T
Sr. No.	Course Outcomes
C0604T.1	Explain basic operation of silicon controlled rectifier (SCR), analyze characteristics & protection schemes of SCR
C0604T.2	Analyze characteristics & explain working of MOSFET, GTO, IGBT, TRIAC & UJT
C0604T.3	Explain and analyze single phase & three phase fully controlled AC to DC converter circuits, evaluate their performance

C0604T.4	Understand and analyze working of single phase & three phase half controlled AC to DC converter circuits
C0604T.5	Examine the working principle of chopper and series resonant inverter
C0604T.6	Analyze DC to AC inverter circuits , understand harmonic attenuation concepts used for inverters

Name of Course:	Control system-I
Course code:	BEELE605T
Sr. No.	Course Outcomes
C0605T.1	Demonstrate an understanding of the fundamentals of (feedback) control system, explain mathematical modeling of the system.
C0605T.2	Explain the effect of feedback and illustrate the different control system components.
C0605T.3	Explain & analyze the time response and time response specifications.

C0605T.4	Analyze the stability of a control system and determine the relative stability of a system through root locus technique
C0605T.5	Evaluate frequency response tools like Bode plot & Nyquist plot and evaluate the stability of a system using these tools.
C0605T.6	Outline the introductory concept of state variable approach.

Name of Course:	Functional English
Course code:	BEELE607T
Sr. No.	Course Outcomes
C0607T.1	Make use of functional grammar proficiently
C0607T.2	Interpret word building, technical jargons, Synonyms/Antonyms, types & techniques of Interview

C0607T.3	Construct business letters and make use of email etiquettes effectively
C0607T.4	Make use of analytical comprehension and draft technical documents effectively
C0607T.5	Utilize technical writing skills effectively

Name of Course:	Power Electronic Practical
Course code:	BEELE604P
Sr. No	Course Outcomes
C0604P.1	Apply and deduce the concepts of Power Electronics through laboratory experimental work.
C0604P.2	Connect the circuit to perform experiments, measure, analyze the observed data to come to a conclusion.
C0604P.3	Estimate and Interpret the V-I characteristics of various Power Electronic Devices

C0604P.4	Examine and design the working of various power electronic converter circuits
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Name of Course:	Control system-I(pract)
Course code:	BEELE605P
Sr. No	Course Outcomes
C0605P.1	Apply and deduce the principles of control system engineering through laboratory experiment
C0605P.2	Connect the circuit, measure and analyse observed data and summarize
C0605P.3	Analyze the use of various error detectors in control systems and distinguish between each one of them.
C0605P.4	Comprehend and evaluate the performance of various position control systems.

C0605P.5	Compare different speed control mechanism used to control the speed of various servomotors.
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Madhukarrao Pandav College Of Engineering Bhilewada, Bhandara

Department Of Electrical Engineering

7th Semester BE

Course Outcome

Name of Course:	Control System-II
Course code:	BEELE701T
Sr. No	Course Outcomes
C0701T.1	Illustrate the need for compensation, classify & evaluate various compensation techniques
C0701T.2	Outline the state variable approach, analyze STM & analyse state equation
C0701T.3	Design & develop state variable feedback process and its effect on controllability & observability
C0701T.4	Analyse, design of optimal control with & without constraints

C0701T.5	Describe & analyse common non- linearities and examine non-linear stability
C0701T.6	Explain and develop discrete time control system

Name of Course:	ELECTRICAL POWER SYSTEM-II
Course code:	BEELE702T
Sr. No	Course Outcomes
C0702T.1	Apply the knowledge of symmetrical components for analyzing unbalanced power system.
C0702T.2	Analyze and solve problems on symmetrical and unsymmetrical faults.
C0702T.3	Analyze power system stability to various systems.

C0702T.4	Evaluate economy of operation to minimize operating costs of power system.
C0702T.5	Understand different types of grounding and compensation.

Name of Course:	HIGH VOLTAGE ENGINEERING
Course code:	BEELE704T
Sr. No	Course Outcomes
C0704T.1	Identify the breakdown mechanism in different types of dielectrics
C0704T.2	Explain in detail about lightning and switching over-voltages, effects and its protection.
C0704T.3	Illustrate the concepts of travelling waves and insulation coordination

C0704T.4	Analyze different methods of generation of high voltage and high current in laboratory
C0704T.5	Analyze different methods of measurement of high voltage and high current in laboratory
C0704T.6	Describe the different methods of non-destructive & high voltage testing of electrical apparatus

Name of Course: E.I.D.	Electrical Installation Design
Course code:	BEELE705T
Sr. No	Course Outcomes
C0705T.1	Apply the concept of load forecasting, solve problems based on regression analysis
C0705T.2	Explain construction, types and selection of PVC/ XLPE cables and overhead conductors.
C0705T.3	Design single line diagrams with specifications for distribution networks, motor and power control centers for industrial installations and design reactive power Compensation.

C0705T.4	Develop 11kV and 33 kV substations for utility and industrial installations and specify the ratings and specifications of apparatus used.
C0705T.5	Illustrate procedure for receipt, storage, testing and commissioning of transformers along with its accessories viz OTI, WTI, Silica Gel Breather, MOG, Buchholz relay etc.
C0705T.6	Identify the provisions for system and equipment earthings as per IS 3043.

Name of Course:	High voltage Engg.(PRACT)
Course code :-	BEELE704P
Sr. No	Course Outcomes
C0704P.1	Apply the concepts of High Voltage Engineering through laboratory experimental work
C0704P.2	Distinguish between different types of Insulators.

C0704P.3	Evaluate the performance of breakdown testing of various dielectrics, lightning arrestors
C0704P.4	Calibrate the breakdown voltage of air using sphere-gap assembly

Name of Course:	Electrical installation and design(PRACT)
Course code:	BEELE705P
Sr. No	Course Outcomes
C0705P.1	Study and understand the working of substation
C0705P.2	Understand various safety devices and earthing used in electrical system
C0705P.3	Study the maintenance and testing of transformer and induction motor

Name of Course:	Project & Seminar
Course code :-	BEELE706P
Sr. No	Course Outcomes (The Student would be able to)
CO706P.1	Do literature survey using library, internet, technical journals, product catalog, datasheets etc for a defined area.
CO706P.2	Demonstrate a sound technical knowledge of their selected project topic.
CO706P.3	Analyze and assemble the basic information to find solution of a complex engineering problem by using suitable methodology/procedure.
CO706P.4	Communicate with engineers and the community at large in written and oral forms.
CO706P.5	Demonstrate the knowledge and Enhance the self study , skills and attitudes of a professional engineer.
CO706P.6	Prepare document and report the project work carried out and proposed work in an appropriate format.

Madhukarrao Pandav College Of Engineering Bhilewada,Bhandara
Department Of Electrical Engineering
8th Semester BE

Course Outcome

Name of Course:	EHVAC AND HVDC TRANSMISSION LINES
Course code:	BEELE801T
Sr. No	Course Outcomes
C0801T.1	Evaluate the power handling capacity of different transmission systems
C0801T.2	Analyze electrostatic and electromagnetic fields and corona in EHVAC lines
C0801T.3	Explain basic configuration of EHVAC & HVDC system
C0801T.4	Utilize the voltage control and current control systems for power flow control in HVDC systems
C0801T.5	Design the AC filters as well as DC filters, Reactive power compensation
C0801T.6	Describe different types of HVDC systems such as MTDC, protection and substation layout of HVDC power plant

Name of Course:	Power Semiconductor Based Drives
Course code:	BEELE802T
Sr. No	Course Outcomes
C0802T.1	Explain dynamics and control of electric drives
C0802T.2	Examine the operation of semiconductor converter controlled dc motor drives
C0802T.3	Explain basic principle of control of induction motors and Utilize those principles using semiconductor converter controlled drives
C0802T.4	Explain basic drives schemes used for synchronous motor control
C0802T.5	Understand the basics of switched reluctance motor drives, brushless dc motor drives and solar and battery powered drives
C0802T.6	Explain semiconductor converter controlled DC and AC traction drives

Name of Course:	Switch Gear & Protection
Course code:	BEELE803T
Sr. No	Course Outcomes
C0803T.1	Describe basic terminology of Protective Relaying, different types of faults and components used in Power System protection
C0803T.2	Describe and Design the Overcurrent Protection schemes used for Medium Voltage Line
C0803T.3	Differentiate and Describe various distance protection schemes used for High Voltage line
C0803T.4	Explain differential protection as applicable to bus bars, transformers, alternators, motors and Employ suitable protection scheme for various abnormal and faulty conditions
C0803T.5	Describe and Differentiate Static Relays with Electromechanical Relays
C0803T.6	Discuss various methods of Arc interruption and Explain Principle of operation, working and applications of different types of Circuit Breakers

Name of Course:	COMPUTER APPLICATION IN POWER SYSTEM
Course code:	BEELE804T
Sr. No	Course Outcomes
C0804T.1	Build Bus Impedance and Admittance matrix (required for load flow and short circuit studies) by graphically, inspection.
C0804T.2	Buid bus impedance matrix by building algorithm (single phase & three phase)
C0804T.3	Distinguish and apply load flow study of a power system by Newton-Raphson, Gauss-Seidel and fast decoupled iterative method.
C0804T.4	Analyze short circuit studies in power system.
C0804T.5	Evaluate transient stability by using modified Euler's method and RK 4 th order method.
Name of Course:	Switch Gear & Protection(PRACT)

Course code:	BEELE803P
Sr. No.	Course Outcomes
C0803P.1	Understand & Demonstrate the operation of Rewirable Fuse, Biased Differential Relay & Earth fault sensing Relay
C0803P.2	Demonstrate & Discuss the operation of various Static Relays
C0803P.3	Understand and Demonstrate the working of IDMT Relay by plotting it's Time-Current Characteristics
C0803P.4	Demonstrate the magnetization characteristics of Current Transformer and Identify the Problems associated with CT saturation

Name of Course:	COMPUTER APPLICATION IN POWER SYSTEM(PRACT)
Course code:	BEELE804P
Sr. No.	Course Outcomes

C0804P.1	Understand computer Application & survey different software used in Electrical Engineering(Exp No.1)
C0804P.2	Construct programs using MATLAB to obtain different power system matrices(Exp No.2,3,4,6)
C0804P.3	Construct programs using MATLAB to study power system stability
C0804P.4	Make use of ETAP software for studying load flow & short circuit studies

Name of Course:	Project
Course code:	BEELE805P
Sr. No.	Course Outcomes
C0805P.1	Apply technical & Managerial skills for analysis, design, simulation & modeling of Engineering problems.
C0805P.2	Learn the time & Finance management for task completion in a group with professional ethics.

C0805P.3	Present their work in a professional manner.
C0805P.4	Enhance the skills of self study and lifelong learning.
C0805P.5	Demonstrate the knowledge and Enhance the self study , skills and attitudes of a professional engineer.
C0805P.6	Document and report the project work carried out in appropriate format.


Department of Electrical Engineering
Madhukarrao Pandav College of
Engineering, Bhilewada, Bhandara

**MADHUKARRAO PANDAV COLLEGE OF
ENGINEERING , BHANDARA**

**Department of Basic Science and Humanities
(First Year)**

FIRST SEMESTER- COURSE OUTCOMES

BESI-1T	Applied Mathematics - 1
CO101.1	Apply the knowledge of differentiation for finding limiting values of Indeterminate forms and Curvature.
CO101.2	Aquire the skill of partial differentiation of first and higher order and understand to apply its application for engineering problems.
CO101.3	Apply the knowledge of matrix Inverse for solving system of linear equations.
CO101.4	Analyze, solve first order first degree and higher degree differential equations and apply the concept to solve engineering problems.
CO101.5	Analyze, solve higher order differential equations and apply the concept in solving various engineering problems.
CO101.6	Apply the knowledge of Complex numbers and De-Moivre's theorem in various engineering problems.
BESI-2T	Engineering Physics
CO102.1	Explain the basic concepts of quantum mechanics and use the concept to solve the engineering problems.
CO102.2	Analyze, explain the concept of Wave packet, and solve Wave equations
CO102.3	Demonstrate the principles concerned to crystal structure and apply them for their engineering applications to solve engineering problems.
CO102.4	Explain the concept of semiconductor physics and identify, list, classify semiconductor devices and their Characteristics.

BESI-2P		Engineering Physics Practical	
CO102.1		Create the basic circuitries in Electronics. Demonstrate and understand the basic principles of operation of semiconductor diodes and transistors. Differentiate between the types of semiconductors through band gap experiment.	
CO102.2		Analyze the magnetic field based experiment to distinguish the materials.	
CO102.3		Work effectively in a small team to complete a complex set of tasks related to engineering physics	
BESI-3T		Engineering Chemistry	
CO103.1		Classify water on the basis of hardness, identify effect of hard water on boilers, propose solutions for water treatment with understanding of limitations.	
CO103.2		Identify the causes, consequences of corrosion, classify corrosion and propose prevention mechanisms.	
CO103.3		Explain, classify, list the traditional construction materials and the new trends applied in the engineering field	
CO103.4		Explain the basic principles of Green Chemistry as well as its applications for protection of the environment and list the working of batteries and their applications in various fields of Engineering	
BESI-3P		Engineering Chemistry Practical	
CO103.1		Analyze different samples of water for the presence of alkalinity, hardness, dissolved oxygen, free chlorine,	
CO103.2		Analyze different samples of water metals like Cu^{++} , Ni^{++} , Fe^{++} , Fe^{+++} etc. and calculate their amounts.	
CO103.3		Determine the quality of water and its utility for domestic and industrial purpose.	
BESI-4T		Basic Electrical Engineering	
CO104T.1		Apply the basic laws of electric circuits to calculate the unknown quantities.	
CO104T.2		Apply the basic fundamental of magnetic circuits to calculate the unknown quantities.	
CO104T.3		Analyze and interpret the sinusoidal electrical quantities and	

	parameters mathematically as well as graphically for 1- phase/3-phase AC circuits.
CO104T.4	Remember need, construction, principle, types and applications of 1 phase transformer & determine the power losses/efficiency and voltage drop/voltage regulation.
BESI-4P	Basic Electrical Engineering practical
CO104P.1	Use basic equipments and techniques to measure electrical quantities.
CO104P.2	Verify the concept of circuit laws and interpret the results.
CO104P.3	Write report (journal) based on the performed experiments and draw inferences.
BESI-5T	Basic Civil Engineering
C105.1	Explain the fundamental of civil engineering, list, classify building in terms of types, components, materials
C105.2	Explain, classify, analyze and apply concepts of surveying and Transportation engineering
C105.3	Identify, define and analyze the terms related to water and waste water generation, treatment and its management.
C105.4	Make use of instrumentation in civil engineering structures, explain the concept of green building and define the terms related to its rating and certification.
BESI-6T	Engineering Graphics - I
C106.1	Draw and interpret technical drawing, layout of drawing sheet, dimensioning, conic sections. Explain, analyze and apply basic principles of orthographic projection, Projections of Points and Lines
C106.2	Analyze and draw projection of planes and solids
C106.3	Conversion of pictorial view into orthographic views.
C106.4	Draw isometric view and isometric projection.
BESI-6P	Engineering Graphics - I practical
C106.1	Draw and interpret technical drawing, layout of drawing sheet, dimensioning, conic sections, basic concepts of orthographic projection, projection of point and line. Draw projection of planes and solids.

C106.2	Develop imaginary skill and convert Three Dimensional view to Two Dimensional representation.
C106.3	Draw isometric view and isometric projection.
BESI-7P	Communication Skill
CO107.1	Students learn the correct method for formal correspondence in writing letters, reports and resumes.
CO107.2	To clear the concept of grammar usage , vocabulary and to develop self confidence through oral communication and reading.
CO107.3	To overcome the barriers in the GDPI and develop analytical perspective through mock drills.
BESI-8P	Computational Skills Lab
C108.1	Explore the internal structure of Computer, its assembly, use of I/O devices and ports.
C108.2	Identify C-Language with Arithmetic, Logical & Relational Operators.
C108.3	Interpret Fundamentals of Loop Control Structures and the implementation of functions.

**MADHUKARRAO PANDAV COLLEGE OF
ENGINEERING , BHANDARA**

**Department of Basic Science and Humanities
(First Year)**

SECOND SEMESTER- COURSE OUTCOMES

BESII-1 Applied Mathematics – II	
CO201.1	Apply the technique of Integral Calculus in various engineering problems using Gamma , Beta function etc.
CO201.2	Trace curves and can apply this knowledge to evaluate areabetween two curves , surface area , volume of solid of revolution
CO201.3	Evaluate double and triple integrals and can apply this technique for finding area between two curves, volume, mass and C.G in engineering problems.
CO201.4	Explain the basic concepts of Vector Algebra, Vector Calculusand apply it to Engineering Problems.
CO201.5	Analyze line, surface and volume integrals and evaluate multiple integrals using relation between single, double and triple integrals.
CO201.6	Identify curves, calculate correlation coefficient, regressionlines and also apply the technique of finite differences for solving difference equations.
BESII-2T Advanced Physics	
CO202.1	Explain the basic principles concerned to laser, Wave optics and their applications in the field of engineering.
CO202.2	Demonstrate theoretical as well as experimental concepts concerned to Electron ballistics and correlate its applications for engineering domain.
CO202.3	Elaborate of the concepts and principles concerned to Electronoptics with demonstration of devices based on the principle.

CO202.4	Explain the concepts and principles concerned to Fibre optics, classify Fiber optic sources, detectors and list its applications. Explain the concepts and principles concerned to Nanoscience. Classify, compare nano materials and list out its applications.
BESII-2P Advanced Physics Practical	
CO202.1	Measure the various electrical and electronics based parameters viz. Amplitude, frequency, phase shift and time period using CRO
CO202.2	Apply the concept of interference in Newton's ring experiment to determine the radius of curvature of lens. Apply the concept of diffraction, birefringence for the various optical based devices using Sodium light and LASER beam. Apply the concept of fibre optic cables to determine the numerical aperture of the fibre cables and to get acquainted with its use in daily life
CO202.3	Work effectively in a small team to complete a complex set of tasks related to advanced physics.
BESII-3T Material Chemistry	
CO203.1	Demonstrate the basic significance of non-Conventional energy sources, Bio-Fuels and their applications.
CO203.2	Make use of liquid fuels in different types of engines and explain the basic concepts of combustion process minimizing the environmental pollution.
CO203.3	Explain the basics of lubricants, classify, compare and select the proper lubricants for specific purposes
CO203.4	Identify, classify contemporary polymers, composites from its properties and explain its applications also explain the basic concepts of nanomaterials, classify, distinguish Carbon nano tubes and its application in the field of medicine, environment and electronics
BESII-3P Material Chemistry Practical	
CO203.1	Determine various properties of lubricants like Viscosity, viscosity index, flash point, cloud and pour point, acid value, saponification value and consistency.

CO203.2	Develop the ability to select lubricants for various purposes
CO203.3	Analyze coal and elucidate its quality and utility
BESII-4T Engineering Mechanics	
C204.1	Make use of vector quantities and explain the resultant of 2D/3D force systems.
C204.2	Analyze the effect of forces on the rigid bodies with the help of various laws and theories.
C204.3	Evaluate Moment of Inertia and explain the Principle of Virtual work applied to equilibrium of Mechanisms, simple beam and truss
C204.4	Apply the basic knowledge obtained in engineering mechanics in solving the engineering problems.
BESII-4P Engineering Mechanics Practical	
C204.1	Perform the test to ascertain the equilibrium of a body under various systems of forces.
C204.2	Perform the tests to understand the terminology related to simple lifting machine, friction, mass moment of inertia.
C204.3	Calculate and draw a graphical solution to problems of equilibrium.
BESII-5T Advanced Electrical Engineering	
CO105T.1	Remember the concept of electrical power system and understand about conventional/renewable energy sources and recognize the necessity of electrical earthing, safety & protecting devices.
CO105T.2	Understand the construction, principle, applications and performance characteristics of DC machines.
CO105T.3	Determine monthly energy bill as per the tariff of power distribution Company and Recognize the electrical energy illumination sources and their selection.
CO105T.4	Understand the construction, principle, types, applications and performance characteristics 3 phase & 1 Phase Induction motors.
BESII-6P Engineering Graphics - II practical	
C206.1	Design and draft the objects with the help of Auto-cad.

C206.2	Know the internal parts of any object by Sections of Solids. Draw the develop the lateral surfaces of solids.
C206.3	Understand the interpretation of missing views and missing lines
BESII-7P Workshop practical	
C106.1	Make use of fitting tool, equipments and measuring instruments, and perform one job in fitting shop.
C106.2	utilize the carpentry tools, equipments and measuring instruments, and perform one job in carpentry shop.
C106.3	use the welding and smithy tools, equipments and measuring instruments, and perform one job in welding shop and smithyshop.
BESII-8T 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 the working environment and organization.
CO208.4	To gain knowledge of the Country's Constitution and political structure of society

MADHUKARRAO PANDAV COLLEGE OF ENGINEERING BHILEWADA, BHANDARA
Program Outcomes & Detailed Course Objectives

MBA (CBCS) New

MBA CBCS (Sem-I)

Course Name	INDUCTION cum FOUNDATION COURSE
CO1	Given a presentation/ debatable topic, discussion, training, the students will be able to understand voice modulation, nuances of diction and articulation which will in turn help them in developing effective communication skills.
CO2	Given a workplace setting, the students will not only be aware about their inner qualities, inner potential and importance of human qualities but also will be able to critically assess the relationship between theory and practice in the formulation of values.
CO3	The Students will be able to perform calculations based on elementary statistics and accountancy
CO4	Given a stressful or demanding situation the students will develop skills like team work, leadership, time management and will also be able to develop self confidence, handle conflicts, be patient and work under pressure.
CO5	Given a problematic situation/ a dilemma/ a choice the students will be able to distinguish between the ethical and unethical ways and chose the right way of doing things in professional and personal life.
Course Name	MANAGERIAL ECONOMICS
CO1	Given the details regarding price and quantity, the future manager will be able to calculate and interpret price elasticity, income elasticity and cross-price elasticity of demand and will also be able examine the uses and abuses of demand forecasting techniques
CO2	Given the information about scale of production, the future manager will be able to analyze various aspects of empirical production functions and also will be able to comprehend the difference sources of economies and diseconomies of scale.

CO3	Given the information pertaining to market structure, the future manager will be able to determine the optimal price and output for firms under different market structures.
CO4	Given the circular flow model of an economy, the future manager will be able to interpret the role and importance of each component with regard to factor market and product market and will also be able to comment on the implications and control of inflation.
CO5	Given the information regarding expenses and income in an economy, the future manager will be able to calculate and explicate the gross domestic product using expenditure and income approaches and given the details about a phase of the business cycle, the future manager will be able to depict the symptoms, causes and effects on economic activities of a nation.
Course Name	MANAGEMENT INFORMATION SYSTEM
CO1	The student will be able to describe different types of management information system from management activity point of view and will also be able to identify and work out KRAs, BOPs and BPPs for various organisations/systems.
CO2	The student will be able to identify the master data, draw report format and interface matrix while making a model of DSS.
CO3	The student will be able to suggest the conceptual model of PMS and will also be able to draw a system model of integrated system (PMS+SCM+Accounting and Billing)
CO4	The student will be able to describe the key features of ERP, SCM and CRM and will also be able to draw functional flow and process flow diagrams for various transactions.
CO5	The student will be able to enumerate the factors affecting system performance and will also be able to comment on the operational feasibility of IT system under consideration
Course Name	BUSINESS RESEARCH
CO1	In context of research, the student will be able to define business research problems and will also able to formulate an abbreviated version of research proposal.
CO3	The student will be able to develop measurement tools and construct appropriate scales therein.

CO4	The student will be able to select suitable method of data collection and will be able to make questionnaire/e-questionnaire
CO5	The student will be able to derive inferences by applying various techniques of interpretation and be and write various types of research reports.
Course Name	ORGANIZATIONAL BEHAVIOUR
CO1	Students will be able to explain the concept of Organisation Design and determine the factors that affect Organisation Design.
CO2	Students will be able to identify the components of Individual Behaviour and apply the concept of Learning, Perception, Attitudes and values.
CO3	The student will be able to distinguish between the various theories of motivation and their application in organizations and also be able to apply these theories to practical problems in organizations. They will also be able to distinguish between a number of different leadership theories & styles and contribute to the effective performance of a team as the team leader or a group member.
CO4	The future managers/ students will be able to analyse the behaviour of individuals and groups in organisations in terms of the key factors that influence organisational behaviour and demonstrate skills required for working in groups (team building).
CO5	The students will be able to justify how organizational change and conflict affect working relationships within organizations and demonstrate how to apply relevant theories to solve problems of change and conflict within organizations
Course Name	FINANCIAL STATEMENT REPORTING AND ANALYSIS
CO1	Given an accounting situation Students will be able to evaluate selected accounting standards and perform their application in actual practice
CO2	Given the Trial Balance and accompanying financial adjustments the future manager shall be able to prepare the financial statements and calculate the profit or loss of a firm as at the end of the financial year.
CO3	Given the financial statements a student will be able to Prepare Cash Flow statement to evaluate whether a firm is doing well financially and has sufficient cash to meet its obligations and support its growth or not.

CO4	Given the financial statements a student will be able to <i>perform</i> Ratio analysis and comment on the performance of the firm. Whether a firm is doing well or not. (As compared to its peers or year on year basis.)
CO5	Given the financial statements a student will be able to formulate common size statement, trend analysis as well as inter-firm and intra firm comparison (As compared to its peers or year on year basis.)
Course Name	BUSINESS STATISTICS & ANALYTICS FOR DECISION MAKING
CO1	For a given dataset, the student should be able estimate the dispersion / variance & symmetry of the data using various measures and draw inferences to facilitate decision making.
CO2	For a given dataset, the student should be able assess the level of association between given variables in the data using various types of correlation analysis techniques. The students should also be able to predict the values of a variable using regression analysis techniques.
CO3	For given situations a student should be able determine the various probabilities arising out of the situation and make use of probability theory and appropriate probability distributions for the purpose of decision making.
CO4	For a given research problem, student should be able to construct appropriate hypotheses and draw conclusions by using a suitable hypothesis testing procedure so as to address the research problem in question.
CO5	The student will be able to differentiate between various forms of analytics and will also be able to choose suitable analytics for decision making.
Course Name	LEGAL & BUSINESS ENVIRONMENT
CO1	Given the circumstances, the learner will be able to infer legal aspects of doing business & plan business activities. In a given situation, the learner will be able make use of provisions of the Contract Act to evaluate a contract used in commercial practice.

CO2	In a given situation, learner will be able to distinguish between various types of Companies and explain their comparative advantages and disadvantages. The learner will be able to explain the legal process involved in formation of a company and understand the relationships amongst the various stakeholders of the company.
CO3	In context of Intellectual Property Rights (IPR) the learner will understand various components of IPR and differentiate between them. The learner can also identify the uses of IPR in business
CO4	Under the given scenario, the learner will be able to describe various provisions of IT Act and will be able to use various provisions of Consumer Protection Act.
CO5	A learner will be able to analyze the elements of Social, political, economic environment around a firm.
Course Name	MANAGERIAL SKILLS FOR EFFECTIVENESS
CO1	The student will be able to make proper use of group of words, synonyms and antonyms, phrases, idioms, proverbs for effective verbal communication
CO2	The student will be able to write essays and CV using Word Processor
CO3	The student will be able to draft business letters for given situations using Word Processor
CO4	The student will be able to apply basic functions of PowerPoint and will also be able to create effective PowerPoint Presentations using templates
CO5	The student will be able to use various spreadsheet functions and will also be create useful spreadsheets

MBA CBCS (Sem-II)

Course Name	FINANCIAL MANAGEMENT
CO1	Given financial cost parameters, the future manager will be able to calculate specific cost of capital (i.e. Cost of debt, preference, equity and retained earnings) and the weighted average cost of capital for any specific given firm.
CO2	Given different financing options, the future manager will be able to analyze the effect of operating and financial leverage on EPS and recommend a suitable long term financing mix for an organization by applying EBIT-EPS analysis, Indifference Level of EBIT and Financial Break-even Analysis for
CO3	Given the cash-flows pertaining to a project, the future manager will be able to estimate projects' cash flows to distinguish between value creating and value destroying investments using time-value intensive DCF techniques (viz. NPV, IRR, discounted payback period, profitability index) and Non-DCF techniques (i.e. Payback Period and Average rate of return approach)
CO4	Given the details pertaining to elements of working capital for a given level of activity, the future manager will be able to ascertain the components of current assets and current liabilities and determine the gross and net operating working capital requirement.
CO5	Given the expected dividends, future price of shares, investor expectations and funding requirements; the future manager will be able to compute the value of a share using various dividend discount models and illustrate whether dividend is relevant for firm valuation or not.
Course Name	MARKETING MANAGEMENT
CO1	For a given marketing objective of a company the student manager will be able to develop a suitable marketing mix.
CO2	For a given product the student managers will be able to apply the three steps of target marketing: market segmentation, target marketing, and market positioning.
CO3	For various stages in the life cycle of the product the student managers will be able to recommend a suitable pricing strategy.

CO4	For a given company the student managers will be able to evaluate different distribution channel options and their suitability for the company's product.
CO5	For a given promotional objective of a company the student manager should be able to develop a suitable promotion mix (advertising, sales promotion, public relations, personal selling, and direct marketing etc.) for the product.
Course Name	HUMAN RESOURCE MANAGEMENT
CO1	Students should be able to explain the importance of Human Resource Management for an organisation and also distinguish between Personnel and HR Management.
CO2	For a given job profile, students should be able to develop a job analysis and produce a job description and job specification.
CO3	Students should be able to design a Human Resource Plan for an organisation and construct its Selection Process
CO4	Students should be able to justify the applicability of various techniques of Training
CO5	Students should be able to outline the performance appraisal process and identify and explain the utility of various modern and traditional methods of Performance Appraisal
Course Name	OPERATIONS MANAGEMENT
CO1	At the end of the course the students can apply the concept of operations management in manufacturing and service sector and will be able to plan and implement production and service related decisions.
CO2	At the end of the course the student will be able to plan production schedules and plan resources (material and machine) required for production
CO3	At the end of the course the students can design maintenance schedules in manufacturing units, identify and propose material handling equipments and implement industrial safety rules
CO4	At the end of the course the students will be able to apply the concepts of purchase, stores and inventory Management and analyze and evaluate material requirement decisions
CO5	At the end of the course the students can measure performance related to productivity and will be able to conduct basic industrial engineering study on men and machines.

Course Name	INTERNATIONAL BUSINESS
CO1	Students should be able to understand various concepts and terminologies involved in International Business and importance of international trade
CO2	Students should be able to evaluate various modes of entry in to International business and should be able to select the best mode of entry given a situation.
CO3	Students should be able to relate and discuss the presence of macro factors (PESTEL) on international business environment
CO4	Students should be able to examine and elaborate the role of various Government institutions in India which support International trade.
CO5	Students should be able to perceive the concepts in recent EXIM policy of India and relate it to the flow of FDI as well as direction of Indian foreign trade.
Course Name	CORPORATE SOCIAL RESPONSIBILITY AND SUSTAINABILITY
CO1	Given the concept of CSR, the future manager will be able to identify the various activities which can benefit the organization under the banner of CSR.
CO2	Given a chance, the future manager will be able to frame and recommend the CSR policy according to sustainable development.
CO3	Given the framework, the future manager will be able to plan the CSR activity according to the various laws and regulations.
CO4	Given the details pertaining to government and non government organizations, the future manager will be able to ascertain the role of various stakeholders in CSR activities and incorporate the guidelines issued by regulatory guidelines in CSR policy.
CO5	Given the task of CSR , the future manager will be able to plan and implement various activities to be taken under CSR activity and evaluate its effectiveness.

Course Name	COST ACCOUNTING
CO1	Given an information about basic conceptual framework of cost, the student will be able of identify/ classify different elements/ classification of cost and will be able to prepare cost sheet and prepare quotations for various business proposals
CO2	Given an information about cost, volume and profit for specific product for mention time period, a student will able to compute Break-even point, Marine of safety, Profit volume ratio, desired profit / desired sales as well as able to evaluate the decision making
CO3	Given information about relevant expenses, a student will be able to classify the cost by nature and estimate cost of operating a service
CO4	Given an information about Expenses & Income / Receipt & Payment / Projected Sales, a student will be able to prepare relevant functional level budgets for an organisation
CO5	Given an information about standard and actual performance, the student will be able to determine Direct Material and Direct Labour Variances
Course Name	MANAGEMENT CASE ANALYSIS
CO1	Given a situation a student will be able to construct SWOT for a concerned orgnaisation or situation as well as he/she will be able to indentify key actors/stakeholders in the given situation
CO2	A student will be able to evaluate the dilemma (Problem/ Issues/ Concerns) in the case.
CO3	A student will be able to develop suitable alternatives for the dilemma identified.
CO4	A student will be able to analyse and evaluate the alternatives using the theoretical framework.
CO5	A Student will be able to discuss suggest suitable roadmaps to overcome the identified dilemma.

MBA CBCS (Sem-III)

Course Name	MM1: SALES AND DISTRIBUTION MANAGEMENT
CO1	Given a situation, student manager will be able to identify appropriate Sales Forecasting method to be adopted by a company.
CO2	Given a situation of newly launched company, student manager will be able to design an effective Sales Compensation Plan for Sales Executive.
CO3	Given a situation of distribution channel of a company, student manager will be able to outline different levels of Marketing channel used by the company.
CO4	Given a situation, student manager will be able to describe the process of Supply Chain and Reverse Logistics.
CO5	Given a situation, student manager will be able to develop e-retailing strategy as a channel of distribution.
Course Name	MM2: DIGITAL AND SOCIAL MEDIA MARKETING
CO1	Given a situation, student manager will be able to identify appropriate Sales Forecasting method to be adopted by a company
CO2	Given a situation of newly launched company, student manager will be able to design an effective Sales Compensation Plan for Sales Executive.
CO3	Upon studying this module, the students will be able to build an understanding of search engines and their utility in digital marketing area. They will also comprehend optimization and the keyword search methodology.
CO4	Given a situation, student manager will be able to describe the process of Supply Chain and Reverse Logistics.
CO5	On studying this module, the student will be able to create favourable online reputation, later, as future managers, for organizations they serve. Students will also be able to form opinion on current trends in digital marketing area and estimate future trends therein.
Course Name	MM3: INTEGRATED MARKETING COMMUNICATION AND BRAND MANAGEMENT

CO1	At the end of the course the student manager shall be able to Design the Integrated marketing communication Process for a company/product
CO2	At the end of the course the student manager shall be able to develop a creative message strategy for a product and execute it.
CO3	At the end of the course the student manager shall be able to implement and evaluate a IMC campaign.
CO4	At the end of the course the student manager shall be able to Identify&Establish Brand Positioning for a given product
CO5	At the end of the course the student manager shall be able to design/develop branding strategies for a product/company, brand marketing program and shall be able to evaluate a branding program.
Course Name	FM1: INVESTMENT ANALYSIS & PORTFOLIO MANAGEMENT
CO1	The student will be able to apply concept of time value of money in computing the value of fixed income securities. The student will also be able to understand the relationship between interest rates, yield and bond prices.
CO2	The student will be able to compute and compare the value of a company's equity share with other company's equity by using various methods and tools of equity valuation
CO3	The student will be able to build and evaluate the relationship between the concept of risk and return and will be able to relate its implication on creating portfolio.
CO4	The student will be able to learn the theoretical concepts of underlying the portfolio creation
CO5	The student will be able to assess the tools and strategies for portfolio creation and evaluation and will also be able to evaluate the portfolios of mutual funds by using the tools of portfolio evaluation
Course Name	FM2: PROJECT APPRAISAL AND FINANCE
CO1	The student will be able to assess capital budgeting decisions under uncertain and risk bearing situation and will also be able to build and interpret the decision tree approach for decision making

CO2	The student will be able to choose between acquisition of long term assets either through lease or financing methods and will also be able to learn process of Private Equity and Venture Capital
CO3	The student will be able to compare the various theories of capital structure and will be able to determine the impact of debt equity mix on value of firm
CO4	The student will be able to evaluate and compare the pre and post merger financial position of the firms.
CO5	The student will be able to determine/ estimate the cash requirement in a firm and will also be able to evaluate the impact of trade receivable policy of a firm on its profitability.
Course Name	FM3: FINANCIAL DERIVATIVES
CO1	The student will be able to describe the concepts of derivatives and its trading and settlement procedures
CO2	The student will be able to calculate the value of Futures and apply it for risk managed trading strategies.
CO3	The student will be able to compute the value of Options and plan various option strategies.
CO4	The student will be able to analyse and use the concept of Swaps and will also be able to make Swaps related decisions.
CO5	The student will be able to relate concept of foreign exchange in currency conversion and apply currency forward rate agreements for hedging.
Course Name	HRM1: MANPOWER PLANNING, RECRUITMENT AND SELECTION
CO1	Students should be able to explain the factors affecting HRP and HRP process of an organisation.
CO2	Students should be able to determine the process of demand and supply forecasting while doing human resource planning.
CO3	Students should be able to devise the manpower plan for an organisation.
CO4	Students should be able to formulate Recruitment and Selection process on the basis of HRP.

CO5	Students should be able to outline the Recent Trends in Manpower Development and Planning
HRM2: PERFORMANCE MEASUREMENT SYSTEM	
CO1	Students should be able to distinguish the concept of Performance appraisal & Performance Management and also should be able to establish relationship of performance management with Strategic Planning.
CO2	Students should be able to determine the Mechanism of Performance Management, and also explain the various steps in performance planning and performance execution
CO3	Students should be able to justify the use of various modern and traditional methods of Performance Appraisal under given situation.
CO4	Students should be able to justify the use of various Performance Assessment Models under given situations; also the student should be able to determine the steps of giving a constructive feedback
CO5	Students should be able to discuss the importance and Principles of ethics in performance management.
Course Name	HRM3: COMPENSATION AND BENEFITS MANAGEMENT
CO1	Students should be able to compare the applicability of various Job Evaluation methods under given situations.
CO2	Students should be able to determine the importance of Wage Differentials and Differentiate between different types of wages
CO3	Students should be able to align the compensation strategy with business strategy
CO4	Students should be able to design and develop the incentive and benefits plans
CO5	Students should be able to outline the various Statutory Provisions related to Compensation

Course Name	OM1: LOGISTICS AND SUPPLY CHAIN MANAGEMENT
CO1	At the end of the course the student will be able to analyze the business requirement and apply supply chain strategies
CO2	The student will be able to design effective distribution network for a company.
CO3	The student shall be able to reduce transportation costs by applying optimization techniques.
CO4	The student shall be able to map the supply chain requirement as per the resources available by identifying the non value added services within the supply chain.
CO5	The student will be able to measure the performance of the supply by applying various metrics in different areas
Course Name	OM2: QUALITY TOOLKIT FOR MANAGERS
CO1	The student will be able to analyze the dimensions of Quality and apply quality systems for effective quality improvement.
CO2	The student will be able to select appropriate statistical tools for quality analysis.
CO3	The student will be able to recommend appropriate SPC tools to improve process quality.
CO4	The student will be able to set bench marks for the organization and apply TQM tools for quality improvement.
CO5	The student will be able to apply productivity tools for improving efficiency in the plant.
Course Name	OM3: OPERATIONS RESEARCH
CO1	The students will be able to attempt operation related problems by suggesting various operation research tools.
CO2	The students will be able to analyze LPP and Game Problems and find solutions for business decisions.

CO3	The students will be able to analyze and evaluate assignment problems to find solutions.
CO4	The students will be able to analyze and evaluate Transportation problems to optimize costs.
CO5	The students will be able to apply PERT/ CPM tools for optimizing time and cost in project management.
Course Name	BA1: DATA VISUALIZATION FOR MANAGERS
CO1	The student will be able to identify and use Interactive data visualization software desktop tools and will also be able to create Interactive data visualization software desktop workspace
CO2	The student will be able to connect data and will also be able to use Interactive data visualization software's File Types effectively.
CO3	The student will be able to create analytics pane and will also be able to use Sort, Filters, Sets, Groups and Hierarchy functions
CO4	The student will be able to create calculations to enhance the data visualisation
CO5	The student will be able to build effective dashboard
Course Name	BA2: DATA MINING
CO1	Given overview of Data Mining and Data pre-processing, the future manager will be able to outline major research challenges of data mining, Kinds of data and applications, Data Cleaning; Data Integration; Data Reduction; Data Transformation and Data Discretization.
CO2	Given the overview of Data Warehousing, the future manager will be able to classify the Concept of Data Warehousing using Data Cube and OLAP and also able to identify the process of Data Generalisation
CO3	Given the details pertaining to Pattern Mining, the future manager will be able to evaluate Patterns using colossal patterns, mining compressed or approximate patterns; explore patterns and its applications.

CO4	Given the details pertaining to Pattern Mining, the future manager will be able to analyse clusters using partitioning method, hierarchical method, density based method and grid based method
CO5	Given the details pertaining to Pattern Mining, the future manager will be able to correlate the use of data mining to the society and also will be able to explain the trend in data mining.
Course Name	BA3: DATA SCIENCE USING R
CO1	Given overview of types of Data, the future manager will be able to read data from different files and create matrices and data frames using R
CO2	Given the overview of functions, subset and loop; the future manager will be able to explain the character functions, date function, package, control statement and do loop.
CO3	Given the basic statistical data, the future manager will be able to draw charts, histogram and plots, and measure central tendencies.
CO4	Given the data for testing of hypothesis, the future manager will be able to test the hypothesis by applying t-test, ANOVA and Chi-square test
CO5	Given the data of variables, the future manager will be able to apply Linear Regression, Logistic regression, Cluster Analysis, Time Series, Decision Tree and Random Forest
Course Name	ED1: ENTREPRENEURIAL THEORY AND PRACTICES
CO1	On completion of module, the student will be able understand the concept of entrepreneurship and what entrepreneurs do. They will also be able to relate the work of few prominent Indian entrepreneurs with the learned concept and compare the work of a manager with that of an
CO2	On completing this module, the student will learn how entrepreneurship evolved from its earlier disorganized form to the current Government supported form. They will also be able to justify the role of EDPs in growth of entrepreneurship.

CO3	Upon studying this module, the students will be able to explain the theories of entrepreneurship and also how the entrepreneurial knowledge gained can be applied to developing entrepreneurial ventures in different economic sectors in India.
CO4	On properly studying this module, the student will be able to examine the impact of different financial aspects on entrepreneurship and can evaluate his/her own ability to set up a small scale venture.
CO5	On studying this module, the student will be able to create a mental map of the network of Government support system and various institutions purposely designed and set up, at national, state and district level, for assisting entrepreneurial ventures.
Course Name	ED2: BUSINESS PLAN FORMULATION
CO1	On completion of module, the student will be able understand the concept and importance of a business plan in entrepreneurship. They will also be able to explain the elements of a good business plan, in order to be effective.
CO2	On studying this module, the students will be able to classify projects into categories and will also be able to formulate a basic business plan (project).
CO3	Upon going through this module, students will be in a position to understand how to develop ideas for a business project. They will also be able to assess the role of environment on different economic sectors and opportunities in India.
CO4	On properly studying this module, the student will be able to examine the importance of project appraisal and can evaluate the different parameters that contribute to feasibility of a business project.
CO5	Detailed study of this module will enable students to formulate steps in starting a small enterprise and visualise a model of small business. They will be able to relate the project to various permissions required for entrepreneurial ventures.
Course Name	ED3: SOCIAL ENTREPRENEURSHIP
CO1	Under given circumstances the Learner shall identify the motivating factors and success factors of a Social enterprise.

CO2	In context of the Indian Society, the learner shall enlist the socio economic challenges and identify the Opportunities for creation of a Social
CO3	Under exemplified conditions the Learner shall be able to discover the business models of Social Entrepreneurship.
CO4	Under different circumstances the learner will be able to select an appropriate form of Social enterprise.
CO5	Given the case the learner shall be able to interpret the business model and illustrate the reasons for success of a social enterprise.
Course Name	IB1: INTERNATIONAL MARKETING MANAGEMENT
CO1	At the end of the course the student shall be able to differentiate between domestic marketing and international marketing and understand clearly features of International Marketing.
CO2	At the end of the course the student shall be able to plan, explain and practice various procedures in International marketing.
CO3	At the end of the course the student manager shall be able to design and develop Global Product Policy decisions.
CO4	At the end of the course the student manager shall be able to design/develop strategies for International Service Sector Marketing
CO5	At the end of the course the student manager shall be able to design/develop functional level strategies for Global Branding.
Course	IB2: EXPORT DOCUMENTATION AND PROCEDURES
CO1	Students should be able to understand various preliminaries for exports and IEC codes and should be able to analyze functions of export marketing organizations and trading houses.
CO2	Students should be able to understand various preliminaries of importand should be able to perceive concepts involved in import documentation and procedures.

CO3	Students should be able to relate the concepts with selection of products and markets for exports as well as examine the pricing and payment methods in exports
CO4	Students should be able to understand and elaborate various concepts in Export documentation, export procedures and contracts.
CO5	Students should be able to perceive the procedures and intricacies of excise clearance and should be able to understand various shipment and post-shipment formalities
Course Name	IB3: INTERNATIONAL FINANCE
CO1	Students Should be able to perceive various concepts involved in International Monetary system and various concepts like international liquidity and SDR
CO2	Students should be able to understand methods of exchange rate determination , understand working of foreign exchange market and relate these concepts with existing scenario in India
CO3	Students should be able to understand and analyze currency contracts and options. They should be able to examine risks involved in foreign trade and ways to manage the risks.
CO4	Students should be able to understand management of short term finance in Multinational corporations and international financing decisions including funding and borrowing decisions
CO5	Students should be able to understand and analyze various concepts like BOP, transfer pricing , structure of International banking and standards of international accounting
Course Name	SUMMER INTERNSHIP PROJECT (SPECIALIZATION BASED)
CO1	Student is able to construct the company profile by compiling the brief history, management structure, products / services offered, key achievements and market performance for his / her organization of internship.
CO2	For his / her organization of internship, the student is able to assess its Strengths, Weaknesses, Opportunities and Threats (SWOT). Student is able to determine the challenges and future potential for his / her internship organization in particular and the sector in general.

CO3	Student is able to test the theoretical learning in practical situations by accomplishing the tasks assigned during the internship period.
CO4	Student is able to apply various soft skills such as time management, positive attitude and communication skills during performance of the tasks assigned in internship organization.
CO5	Student is able to analyze the functioning of internship organization and recommend changes for improvement in processes.
Course Name	STRATEGIC MANAGEMENT
CO1	The student will be able to evaluate alternative paradigms of strategy and their influence on strategic decision making.
CO2	The student will be able to analyse and develop the vision and mission statement for given organisations and will also be able to differentiate between the external and internal components of environment while performing SWOT analysis.
CO3	The student will be able to design and develop corporate level strategies for any organization.
CO4	The student will be able to design/develop business level strategies for any organization.
CO5	The student will be able to evaluate all levels strategies and will also be design/develop functional level strategies for any organization.

MBA CBCS (Sem-IV)

Course Name	MM4: RETAIL SALES MANAGEMENT AND SERVICES MARKETING
CO1	On completion of this module the students will be able to utilise the knowledge gained on Retail Industry and the existing retail environment. The student will also be able to plan their retail business as future manager by applying retail segmentation.
CO2	On completing this module, the students will be able to take part in the decisions involved in running a retail firm. They will also be able to form their own opinion on various retail formats and recommend strategies for retail planning.
CO3	On completing this module, the students will be able to draw relationship between retail merchandising, marketing communication, CRM and retail success. They will also be in a position to predict impact of changing trends in Indian market scenario on retail business.
CO4	On completion of this module, the students will be able to analyse concepts, functions, and techniques of the craft of service marketing services and will also be able to identify critical issues in service design & delivery. As future managers they will also be able to adapt a particular model of service marketing to a firm they work with.
CO5	On completing this module, the students will be able to examine the application of integrated marketing communication (IMC) to retail business and develop an effective service marketing system for retail business. Students will also be in a position to recommend ethical rules for conduct of retail business in India.
Course Name	FM4: MANAGING BANKS AND FINANCIAL INSTITUTIONS
CO1	The student will be able to identify role of banking in economic development of country.
CO2	The student will be able to assess the impact of monetary policy and its instruments on banking sector
CO3	The student will be able to analyse the health and risk of bank balance sheet and will also be able to appraise credit management parameters of a bank
CO4	The student will be able to identify the NPAs and will also be able to appraise the process of securitisation.

CO5	The student will be able to distinguish the utility of various non banking institutions like insurance, housing finance and credit rating
Course Name	HRM4: TEAM DYNAMICS
CO1	Students should be able to justify the applicability of various theories of Motivation in given situation and appraise the role of motivation in Team Behavior
CO2	Students should be able to determine the importance of Interpersonal Communication and application of FIRO-B and Johari Window.
CO3	Student should be able to explain the various steps of Group Formation and types of team
CO4	In a given situation, Students should be able to justify the Conflict resolution strategy.
CO5	Students should be able to apply various OD Intervention tools under given situation.
Course Name	OM4: SALES AND OPERATIONS PLANNING
CO1	At the end of the course the student will be able to develop short term, medium term and long term forecasting needs in the organization.
CO2	The student will be able to apply forecasting models for forecasting.
CO3	The student will be able to develop aggregate planning by applying aggregate strategies.
CO4	The student will be able to plan MPS and calculate bill of materials and MRP for production plan.
CO5	The students will be able to plan distribution of finished goods taking into consideration various inputs and constraints.

Course Name	BA4: WEB AND SOCIAL MEDIA ANALYTICS
CO1	The student will be able to choose theright tools for website design for measured outcomes.
CO2	The student will be able to construct a modern metrics of better performance from eight specific metrics for web performance.
CO3	The student will be able to develop a model for moving quickly from data to actions on a particular website.
CO4	The student will be able to develop themodel for measuring the success of a Mobile & Social Media Campaign..
CO5	The student will be able to develop a model for the website Outcome.
Course Name	ED4: ENTREPRENEURIAL MARKETING
CO1	The student will be able to interpret the micro and macro environment of the firm
CO2	The student will be able to use entrepreneurial approaches to marketing functions.
CO3	The student will be able to describe consumer buying decision process
CO4	The student will be able to justify the franchising mechanism as a tool for entrepreneurial marketing
CO5	The student will be able to justify and elaborate the tools of relationship marketing
Course Name	IB4: INTERNATIONAL HUMAN RESOURCE MANAGEMENT
CO1	Students will be able to differentiate between international and domestic HRM and analyze issues in IHRM and competencies of international managers
CO2	Students will be able to understand recruitment and selection process for expatriates and various concepts involved in it such as HR outsourcing
CO3	Students will be able to perceive concepts involved in training and development of expatriates and concepts such as diversity training and cross cultural team building.

CO4	Students will be able to understand and examine various international performance management processes and compensation of expatriates
CO5	Students will be able to understand and analyze various cultural dimensions, cultural sensitivity as well as should be able to elaborate collective bargaining and employee relations in various countries.
Course Name	PROJECT WORK AND VIVA VOCE
CO1	In a specialization domain of his / her choice, student manager will be able to choose an appropriate topic for study and will be able to clearly formulate & state a research problem
CO2	For a selected research topic, student manager will be able to compile the relevant literature and frame hypotheses for research as applicable
CO3	For a selected research topic, student manager will be able to plan a research design including the sampling, observational, statistical and operational designs if any
CO4	For a selected research topic, student manager will be able to compile relevant data, interpret & analyze it and test the hypotheses wherever applicable
CO5	Based on the analysis and interpretation of the data collected, student manager will be able to arrive at logical conclusions and propose suitable recommendations on the research problem
CO6	Student manager will be able to create a logically coherent project report and will be able to defend his / her work in front of a panel of examiners
Course	EXIT SEMINAR AND OPEN DEFENCE
CO1	The student will be able to apply knowledge of management theories and practices to solve business problems
CO2	The student will Foster Analytical and Critical thinking abilities for data-based decision making

CO3	The student will acquire Ability to develop Value Based Leadership ability
CO4	The student will develop the Ability to understand, analyse and communicate global, economic, legal, and ethical areas of business
CO5	The student will acquire the Ability to lead themselves and others in the achievement of organizational goals, contributing effectively to a team environment.


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