



Subject- Engineering Mathematics- I		Subject Code- BTBS101
CO	Statement	
BTBS101_1	Apply the matrix technique (Linear algebra) to find solutions of system of linear equations arising in many engineering problem	
BTBS101-2	Demonstrate the concept partial derivatives and their applications to Maxima/ Minima, series expansion of multi valued functions.	
BTBS101-3	Compute Jacobian of functions of several variables and their applications to engineering problems	
BTBS101-4	Identify and sketch of curves in various coordinate system.	
BTBS101-5	Evaluate multiple integrals and their applications to area and volume.	

Subject- Engineering Physics		Subject Code- BTBS102
CO	Statement	
BTBS102-1	Explain & apply the concept of types of Oscillation, Dielectric properties & ultrasonic	
BTBS102-2	Explain & compare between Interference & Polarisation of light ,working Principle of Lasers & Fibre optics	
BTBS102-3	Interpret, apply & demonstrate principle of motion of charged particles in EF&MF, Bainbridge Mass spectrograph & G M counter	
BTBS102-4	Identify Types of crystals & crystal planes using Miller indices, Experimental approach.	
BTBS102-5	student will be able to understand properties of magnetic, semiconducting and super conducting material	

Subject- Engineering Graphics		Subject Code- BTES103
CO	Statement	
BTES103-1	Use of drawing instruments effectively for drawing and dimensioning.	
BTES103-2	Explain conventions and methods of engineering drawing.	
BTES103-3	Apply concept of projections of points, lines, planes, solids and section of solids.	
BTES103-4	Construct isometric and orthographic views of given objects.	

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Subject- Communication Skills		Subject Code- BTHM104
CO	Statement	
BTHM104_1	Apply speaking and writing skills in professional as well as social situations	
BTHM104_2	Overcome Mother Tongue Influence and demonstrate neutral accent while exercising English	
BTHM104_3	Apply communication skills for Presentations, Group Discussion and interpersonal interactions.	
BTHM104_4	Apply grammar correctly during Speaking and Writing situations especially in context with Presentations, Public Speaking, Report writing and Business Correspondence	

Subject- Energy and Environment Engineering		Subject Code- BTES105
CO	Statement	
BTES105_1	Identify conventional, non-conventional energy sources.	
BTES105_2	Know and discuss power consuming and power developing devices for effective utilization and power consumption	
BTES105_3	Identify various sources of air, water pollution and its effects.	
BTES105_4	Know and discuss noise, soil, thermal pollution and Identify solid, biomedical and hazardous waste.	

Subject- Basic Civil and Mechanical Engineering		Subject Code- BTES106
CO	Statement	
BTES106_1	Identify various Civil Engineering materials and choose suitable material among various options.	
BTES106_2	Apply principles of surveying to solve engineering problem.	
BTES106_3	Identify various Civil Engineering structural components and select appropriate structural system among various options	
BTES106_4	Explain and define various properties of basic thermodynamics, materials and manufacturing processes.	
BTES106_5	Know and discuss the working principle of various power consuming and power developing devices	

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Subject- Engineering Physics Lab		Subject Code- BTBS107L
CO	Statement	
BTBS107L_1	Study the Phenomena of interference, diffraction and polarization of light waves	
BTBS107L_2	Enhance the knowledge of the basic semiconductor devices with hand on experience, by measuring their basic characteristics.	
BTBS107L_3	Conduct an experiment collaboratively and ethically.	
BTBS107L_4	Uses Miller indices to draw Miller planes in crystal	

Subject- Engineering Graphics Lab		Subject Code- BTES108L
CO	Statement	
BTES108L_1	Draw the various drawing standards and geometrical constructions using the drawing instruments.	
BTES108L_2	Apply the concept of orthographic projection of an object to draw several 2D views	
BTES108L_3	Draw and explain projection of points, lines, planes, solid and section of solid.	
BTES108L_4	Apply the visualization skill to draw a simple isometric projection from given orthographic views precisely using drawing equipment	

Subject- Communication Skills Lab.		Subject Code- BTHM109L
CO	Statement	
BTHM109L_1	Identify Phonemic Script and articulate different sounds in English	
BTHM109L_2	Use proper pronunciation and transcription	
BTHM109L_3	Plan and deliver the well-argued presentations	
BTHM109L_4	Analysis of speeches or discourses and several articles	

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**Department of Basic Sciences & Humanities**

Subject- Engineering Mathematics-II		Subject Code- BTBS201
CO	Statement	
BTBS201_1	Discuss the need and use of complex variables to find roots, to separate complex quantities and to establish relation between circular and hyperbolic functions.	
BTBS201_2	Solve first and higher order differential equations and apply them as a mathematical modelling in electric and mechanical systems.	
BTBS201_3	Determine Fourier series representation of periodic functions over different intervals.	
BTBS201_4	Demonstrate the concept of vector differentiation and interpret the physical and geometrical meaning of gradient, divergence & curl in various engineering streams.	
BTBS201_5	Apply the principles of vector integration to transform line integral to surface integral , surface to volume integral & vice versa using Green's , Stoke's and Gauss divergence theorems.	

Subject- Engineering Chemistry		Subject Code- BTBS202
CO	Statement	
BTBS202_1	Demonstrate knowledge of chemistry in technical fields.	
BTBS202_2	Bring adaptability to new developments in Engineering Chemistry and to acquire the skills required to become a perfect engineer.	
BTBS202_3	Develop the importance of water in industrial and domestic usage.	
BTBS202_4	Identify the concepts of Chemistry to lay the ground work for subsequent studies in various engineering fields.	
BTBS202_5	Examine a fuel and suggest alternative fuels.	

Subject- Engineering Mechanics		Subject Code- BTES203
CO	Statement	
BTES203_1	Apply fundamental Laws of Engineering Mechanics	
BTES203_2	Apply Conditions of static equilibrium to analyze given force system	
BTES203_3	Compute Centre of gravity and Moment of Inertia of plane surfaces	
BTES203_4	Compute the motion characteristics of a body/particle for a Rectilinear and Curvilinear Motion	
BTES203_5	Know and discuss relation between force and motion characteristics	

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Subject- Computer Programming in C		Subject Code- BTES204
CO	Statement	
BTES204_1	Gain a broad perspective about the uses of computers in engineering industry and C Programming.	
BTES204_2	Develop the basic concept of algorithm, algorithmic thinking and flowchart.	
BTES204_3	Apply the use of C programming language to implement various algorithms and develops the basic concepts and terminology of programming in general.	
BTES204_4	Use the more advanced features of the C language.	
BTES204_5	Identify tasks in which the numerical techniques learned are applicable and apply them to write programs and hence use computers effectively to solve the task.	

Subject- Basic Electrical and Electronics Engineering		Subject Code- BTES206
CO	Statement	
BTES206_1	Discuss the various types of electrical components with uses, different energy resources and its utilization.	
BTES206_2	Discuss the various measuring, storage devices and protection systems used.	
BTES206_3	Understand the basics of Semiconductor Diode ,devices its Characteristics & Applications	

Subject- Engineering Chemistry Lab		Subject Code- BTBS207L
CO	Statement	
BTBS207L_1	To Apply basic techniques used in chemistry laboratory for small/large scale water analyses/purification.	
BTBS207L_2	To Estimate the ions/metal ions present in domestic/industry waste water.	
BTBS207L_3	To Utilize the fundamental laboratory techniques for analyses such as titrations.	
BTBS207L_4	To Analyze and gain experimental skills.	

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Subject- Engineering Mechanics Lab		Subject Code- BTES208L
CO	Statement	
BTES208L_1	Study and Apply basic laws of Engineering Mechanics to given force system.	
BTES208L_2	Study and Apply analytical and graphical conditions of equilibrium to given force system.	
BTES208L_3	Study and apply concept of friction.	
BTES208L_4	Study and find basic parameters of simple lifting machines.	

Subject- Workshop Practices		Subject Code- BTES205
CO	Statement	
BTES205_1	To understand and perform various operations on carpentry job	
BTES205_2	To perform welding job operation	
BTES205_3	Introduction and assembly of plumbing with help of its components	
BTES205_4	To understand and assembly of fitting job	
BTES205_5	To understand and perform various operations on sheet metal job	
BTES205_6	Introduction to lathe machine and to perform simple operations on it	

Subject- Seminar		Subject Code- BTES210S
CO	Statement	
BTES210S_1	Identify and Analyse recent topics of any domain	
BTES210S_2	Enhance technical writing skills	
BTES210S_3	Identify an engineering problem, analyze it and propose a work plan to solve it.	
BTES210S_4	Communicate with professional technical presentation skills and Apply modern documentation tools to write the report	

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**COURSE OUTCOMES****SECOND YEAR B.TECH**

Course Outcomes (CO's): Engineering Mathematics-III Upon successful completion of this course, the students will be able to		Brooms Level
BTBS301_1	Apply the various techniques of Laplace transform to find the solutions of special, periodic & Heaviside's functions.	L3
BTBS301_2	Apply the Inverse Laplace transform to applications of higher order linear differential equation using appropriate techniques.	L3
BTBS301_3	Compute the Fourier transform of various functions and their applications to engineering problems.	L5
BTBS301_4	Obtain Interpolating polynomials, numerically differentiate and integrate functions, numerical solutions of differential equations using single step and multi-step iterative methods used in modern scientific computing.	L4
BTBS301_5	Analyze conformal mappings, transformations and perform contour integration of complex functions in the study of signal processing.	L4

Course Outcomes (CO's): Discrete Mathematics Upon successful completion of this course, the students will be able to		Brooms Level
BTCOC302_1	To understand propositional logic and operations on set, functions, relation, graph tree, algebraic systems	L2,L3
BTCOC302_2	To solve problems using operations on sets, functions, relations, counting techniques and generating function.	L2,L3
BTCOC302_3	Apply various algorithms and use of graphs, trees as tools to visualize and solve problems..	L3.L4
BTCOC302_4	Summarize various properties of algebraic systems using one or two operations, boolean algebra.	L2.L3

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Faculty of Engineering

Department of Computer Science and Engineering

Course Outcomes (CO's): Data Structure		Brooms Level
Upon successful completion of this course, the students will be able to		
BTCOC303_1	Define data structures like array, stack, queues and linked list.	L3
BTCOC303_2	Explain insertion, deletion and traversing operations on data structures and identify the asymptotic notations to find the complexity of an algorithm.	L3
BTCOC303_3	Analyze various searching and sorting techniques	L3
BTCOC303_4	Choose appropriate data structure while designing the algorithms and Design advance data structures	L3

Course Outcomes (CO's): Computer Architecture & Organization		Brooms Level
Upon successful completion of this course, the students will be able to		
BTCOC304_1	Discuss the basic concepts and structure of computers.	L2
BTCOC 304_2	Understand concepts of register transfer logic and Instruction set	L3
BTCOC 304_3	Discuss Computer Arithmetic and understand arithmetic co-processor	L3
BTCOC 304_4	Explain different types of addressing modes and memory organization.	L3
BTCOC 304_5	Discuss the Control Unit and Input / Output Organization	L2

Course Outcomes (CO's): Object Oriented Programming in Java		Brooms Level
Upon successful completion of this course, the students will be able to		
BTCOC305_1	To write, compile, run, and test simple object-oriented Java programs.	L3
BTCOC305_2	Read and make elementary modifications to Java programs that solve real-world problems	L3
BTCOC305_3	Validate input in a Java program.	L3
BTCOC305_4	Identify and fix defects and common security issues in code	L3

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Faculty of Engineering

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Course Outcomes (CO's): Data Structure & Object Oriented Programming in Java Lab		Brooms Level
Upon successful completion of this course, the students will be able to		
BTCOL306_1	Learn to implement various data structures like stack, queue, tree and Linked list	L3
BTCOL306_2	Implement various searching and sorting techniques.	L2
BTCOL306_3	Learn To write, compile, run, and test object-oriented Java programs.	L3
BTCOL306_4	Implement Java programs that solve real-world problems	L3

Course Outcomes (CO's): Seminar-I		Brooms Level
Upon successful completion of this course, the students will be able to		
BTCOS307_1	Identify and Analyze recent topics of any domain	L3
BTCOS307_2	Enhance technical writing skills	L2
BTCOS307_3	Identify an engineering problem, analyze it and propose a work plan to solve it.	L3
BTCOS307_4	Communicate with professional technical presentation skills and Apply modern documentation tools to write the report	L2

Course Outcomes (CO's): Field Training/Industrial Training		Brooms Level
Upon successful completion of this course, the students will be able to		
BTES211P_1	Demonstrate competency in relevant field of engineering.	L3
BTES211P_2	Demonstrate knowledge with ethical and professional responsibilities.	L3
BTES211P_3	Apply appropriate techniques, resources and modern tools.	L3
BTES211P_4	Communicate effectively and represent the processes in the industry.	L3

Course Outcomes (CO's): Design & Analysis of Algorithms		Brooms Level
Upon successful completion of this course, the students will be able to		
BTCOC401_1	Understand the basic terminologies of algorithms & flowchart, Analyze the time complexity of a given algorithm	L2
BTCOC401_2	Identify appropriate data structure as applied to specific problem domain and examine computational complexities	L2
BTCOC401_3	Decide the appropriate design methodology for a given problem from among the paradigms of Divide & Conquer, Dynamic Programming, Greedy and Backtracking.	L2
BTCOC401_4	Distinguish between P and NP classes of problems	L3

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Faculty of Engineering

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Course Outcomes (CO's): Operating Systems		Brooms Level
Upon successful completion of this course, the students will be able to		
BTCOC402_1	Demonstrate various basic concepts related to OS	L2
BTCOC402_2	Implement various CPU scheduling algorithm	L3
BTCOC402_3	Describe the concepts of process synchronisation and deadlock	L2
BTCOC402_4	Distinguish between various memory amangement schemes, implement various page replacement algorithm	L3
BTCOC402_5	Demonstare I/O management and file system and implement disk scheduling algorithms.	L2

Course Outcomes (CO's): Basic Human Rights		Brooms Level
Upon successful completion of this course, the students will be able to		
BTHM403.1	Identify and evaluate the historical,philosophical,political and cultural developments establishing human rights as a set of global norms,agreements and procedures.	L3
BTHM403.2	Explore global human right institutions,law,and processes and assess the impact of their interaction with national and local cultural practices and norms	L3
BTHM403.3	Critically examine the impact of diverse geographic cultural and theoretical contexts on the social acceptance and practical application of human rights norms	L3
BTHM403.4	Synthesize intredisciplinary approches and contributions to topics such as gender,race,poverity,violence and post colonialism within a human rights	L2

Course Outcomes (CO's): Probability Theory & Random Process		Brooms Level
Upon successful completion of this course, the students will be able to		
BTBSC404.1	Undestand the fundamental knoledge of the concepts of the probability	L2
BTBSC404.2	Undestand the basic concepts of one and two dimensionals random variables.	L2
BTBSC404.3	Apply the concept of random process in engineering decision	L3
BTBSC404.4	apply the concept of correlation and spectral densities	L3

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Faculty of Engineering
Department of Computer Science and Engineering

Course Outcomes (CO's): Digital Logic Design & Microprocessor Upon successful completion of this course, the students will be able to		Brooms Level
BTES405_1	Analyze combinational logic circuits, Simplification of algebraic equations using Karnaugh maps.	L4
BTES405_2	Analyze Synchronous and Asynchronous Sequential Equation.	L4
BTES405_3	Acquire the knowledge of fundamentals of microprocessor and microcontrollers architecture.	L2
BTES405_4	Apply Knowledge and demonstrate programming proficiency using the various addressing modes of data transfer instructions.	L3

Course Outcomes (CO's): Operating System & Python Lab Upon successful completion of this course, the students will be able to		Brooms Level
BTCOL406_1	Demonstrate UNIX command and implement shell scripts	L3
BTCOL406_2	Implementation: on CPU scheduling algorithms, page replacement algorithms, Disk Scheduling algorithms and concepts based on threads and process.	L2
BTCOL406_3	To Design the programming skills in core Python.	L3
BTCOL406_4	To Implement Object Oriented Skills in Python	L2

Course Outcomes (CO's): Seminar-II Upon successful completion of this course, the students will be able to		Brooms Level
BTCOS407_1	Identify and Analyze recent topics of any domain	L4
BTCOS407_2	Enhance technical writing skills	L3
BTCOS407_3	Identify an engineering problem, analyze it and propose a work plan to solve it.	L4
BTCOS407_4	Communicate with professional technical presentation skills and Apply modern documentation tools to write the report	L2

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THIRD YEAR B.TECH

Course Outcomes (CO's): Database Systems		Brooms Level
Upon successful completion of this course, the students will be able to		
BTCOC501_1	Illustrate the concept of Database Management System.	L3
BTCOC501_2	Explain Entity Relationship Diagrams apply the SQL, Relational Algebra and Relational Calculus queries.	L2
BTCOC501_3	Illustrate concept of functional dependencies and determine normalization.	L3
BTCOC501_4	Explain and Elaborate the concept of Transaction Processing, Concurrency control and Failure Recovery.	L2

Course Outcomes (CO's): Theory of Computation		Brooms Level
Upon successful completion of this course, the students will be able to		
BTCOC502_1	Outline the fundamental concepts in automata theory and formal languages	L2
BTCOC502_2	Explain context-free grammars, properties of languages, grammars and automata with rigorously formal mathematical method.	L2
BTCOC502_3	Differentiate and manipulate formal descriptions of push down automata, its applications and transducer machines	L3
BTCOC502_4	Illustrate the basic properties of Turing machines and computing the tractability and decidability with Turing machine.	L2

Course Outcomes (CO's): Software Engineering		Brooms Level
Upon successful completion of this course, the students will be able to		
BTCOC503_1	Able to define software engineering process and practices, and demonstrate various process models	L2
BTCOC503_2	Able to identify different types of risks in software development	L2
BTCOC503_3	Able to distinguish different testing strategies and it's working	L3
BTCOC503_4	Able to Estimate the quality of software process & develop SRS document for project.	L3

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Course Outcomes (CO's): Human Computer Interaction Upon successful completion of this course, the students will be able to		Brooms Level
BTCE504A_1	Acquire fundamental concepts of computer components functions regarding interaction with human and vice versa.	L2
BTCE504A_2	Analyze interface problems to recognize what design approach and interaction styles is required in the light of usability standards and guidelines.	L4
BTCE504A_3	Apply basic concepts to construct a user-interaction strategy for a given problem its usability evaluation functional deploying, effectual technologies in a range of circumstance and to meet desired needs within realistic world.	L3
BTCE504A_4	Ability to design and develop an interface by using appropriate HCI techniques that are preferred by the user	L4

Course Outcomes (CO's): Business Communication Upon successful completion of this course, the students will be able to		Brooms Level
BTCE505B_1	Develop concept of communication and speaking skills.	L2
BTCE505B_2	Develop the ways to improve personality, soft skills and organizational skills.	L2
BTCE505B_3	Develop the thinking ability and expression improvement in group discussion.	L3
BTCE505B_4	Design the effective resume as per industry requirement and be ready for personal interview through mock interviews and has knowledge of various interviews.	L3

Course Outcomes (CO's): Database System & Software Engg. Lab Upon successful completion of this course, the students will be able to		Brooms Level
BTCOL506_1	Identify appropriate database schema for a given problem and design an E-R model for real world problem	L3
BTCOL506_2	Implement a database, formulate quires using DDL, DML commands and various integrity constraints using SQL	L3
BTCOL506_3	Discuss and Analyses how to develop software requirements specifications for a given problem.	L4
BTCOL506_4	Understand and Describe basic concept of UML, design, implementation of test cases, DFD models, structure and behavior UML diagrams.	L2

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Course Outcomes (CO's): Mini Project-I Upon successful completion of this course, the students will be able to		Brooms Level
BTCOM507_1	Reorganize the procedures of design, development with a concern for society, environment and ethics	L3
BTCOM507_2	Apply modern software tools to implement the software solution of the problem	L3
BTCOM507_3	Apply modern software tools to design test cases and perform testing of the implemented software solution and deploy the software solution after successful testing	L4
BTCOM507_4	Communicate effectively by participating in various competitions, publishing and presenting project work through conference / journal paper	L2

Course Outcomes (CO's): Field Training/Industrial Training Upon successful completion of this course, the students will be able to		Brooms Level
BTCOF408_1	Demonstrate competency in relevant field of engineering.	L3
BTCOF408_2	Demonstrate knowledge with ethical and professional responsibilities.	L3
BTCOF408_3	Apply appropriate techniques, resources and modern tools.	L3
BTCOF408_4	Communicate effectively and represent the processes in the industry.	L3

Course Outcomes (CO's): Compiler Design Upon successful completion of this course, the students will be able to		Brooms Level
BTCOC601_1	Design phases of a compiler and role for generation of the Lexical analyser	L3
BTCOC601_2	Design algorithm for parser and parsing technique	L3
BTCOC601_3	Construction of Syntax Trees Explain the concept of intermediate code generation technique	L2
BTCOC601_4	Demonstrate code optimization technique and fundamental of runtime environment.	L2

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Faculty of Engineering

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Course Outcomes (CO's): Computer Networks Upon successful completion of this course, the students will be able to		Brooms Level
BTCOC602_1	To develop an understanding of modern network architectures from a design and performance perspective.	L3
BTCOC602_2	Analyze the requirements for a given organizational structure and select the most appropriate networking architecture and technologies.	L2
BTCOC602_3	To study protocols, network standards, the OSI model, IP addressing, cabling, networking components, and basic LAN design.	L2
BTCOC602_4	Ability to write program using socket programming.	L2

Course Outcomes (CO's): Machine Learning Upon successful completion of this course, the students will be able to		Brooms Level
BTCOC603_1	Identify the characteristics of machine learning, binary classification	L2
BTCOC603_2	Solve classification problems using concept learning and multiclass classification	L3
BTCOC603_3	Apply tree based and linear learning models to real world problems.	L3
BTCOC603_4	Analyse Bayesian classifier, distance base classification and clustering algorithms.	L4

Course Outcomes (CO's): Internet of Things Upon successful completion of this course, the students will be able to		Brooms Level
BTCOE604B_1	Understand the concepts of Internet of things and its architectures	L2
BTCOE604B_2	Implement interfacing of various sensors, Actuators and smart objects with Arduino/Raspberry Pi.	L3
BTCOE604B_3	Describe the role of Internet protocol and application level protocols in IOT	L3
BTCOE604B_4	Identify the common challenges in IOT security	L2
BTCOE604B_5	Understand the tools and techniques used in Big data analytics for IOT	L2

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Faculty of Engineering

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Course Outcomes (CO's): Consumer Behaviour Upon successful completion of this course, the students will be able to		Brooms Level
BTHM605C_1	Identify the dynamics of human behavior and the basic factors that influence the consumers decision process	L2
BTHM605C_2	Explain skills in the research and analysis of customer segments, demand, and market potential.	L3
BTHM605C_3	understand various models of consumer behavior and its effect in marketing.	L2
BTHM605C_4	Compare physiological, social and ethical implications of marketing actions on consumer behavior and adopt appropriate techniques for diffusion.	L4

Course Outcomes (CO's): Competitive Programming & Machine Learning Lab Upon successful completion of this course, the students will be able to		Brooms Level
BTCOL606_1	Implement classification problems with decision trees, support vectors, Bayesian learning techniques	L3
BTCOL606_2	Solve distance based supervised and unsupervised learning problems and Demonstrate Neural network, genetic algorithms	L3
BTCOL606_3	Learn to implement various Programming Challenges by Choosing different Programming Languages and object-oriented concepts through programming	L2
BTCOL606_4	Implement various searching and sorting Algorithms, Arithmetic and Algebra technique to solve real-world problems	L3

Course Outcomes (CO's): Mini Project-II Upon successful completion of this course, the students will be able to		Brooms Level
BTCOM607_1	Reorganize the procedures of design, development with a concern for society, environment and ethics	L3
BTCOM607_2	Apply modern software tools to implement the software solution of the problem	L3
BTCOM607_3	Apply modern software tools to design test cases and perform testing of the implemented software solution and deploy the software solution after successful testing	L4
BTCOM607_4	Communicate effectively by participating in various competitions, publishing and presenting project work through conference / journal paper	L2

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Faculty of Engineering
Department of Computer Science and Engineering

FINAL YEAR B.TECH

Course Outcomes (CO's): Software Engineering Upon successful completion of this course, the students will be able to		Brooms Level
BTCOC701_1	Able to define software engineering process and practices, and demonstrate various process models	L2
BTCOC701_2	Able to identify different types of risks in software development	L3
BTCOC701_3	Able to distinguish different testing strategies and it's working	L2
BTCOC701_4	Able to Estimate the quality of software process & develop SRS document for project.	L2

Course Outcomes (CO's): Big Data Analytics Upon successful completion of this course, the students will be able to		Brooms Level
BTCOE702A_1	Understand the basic concepts of Big Data Hadoop, Apache Spark & File system.	L2
BTCOE702A_2	Apply map reduce concepts for desired applications.	L3
BTCOE702A_3	Learn the different big data streaming platforms.	L2
BTCOE702A_4	Understand the Machine learning algorithms & visualize the data.	L2
BTCOE702A_5	To experiment with Database for the Modern Web	L3

Course Outcomes (CO's): Natural Language Processing Upon successful completion of this course, the students will be able to		Brooms Level
BTCOE703C_1	Understand core concepts of Natural Language Processing and levels of language analysis	L2
BTCOE703C_2	Application of Probabilistic model of defining language and techniques	L3
BTCOE703C_3	Application of Hidden Markov model and Speech Recognition	L3
BTCOE703C_4	Application of context free grammar and language parsing	L4

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BTCOE703C_5	Understanding different applications of Natural Language Processing	L2
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Course Outcomes (CO's): Block Chain Technology Upon successful completion of this course, the students will be able to		Brooms Level
BTCOE704A_1	Understand the basics of block chain technology & its features.	L2
BTCOE704A_2	Summarize the basics of Cryptocurrency & how does it works.	L2
BTCOE704A_3	Identify the modern currencies and its market usage	L2
BTCOE704A_4	Illustrate the concepts of Bitcoin and their usage.	L3

Course Outcomes (CO's): Full Stack Development Lab Upon successful completion of this course, the students will be able to		Brooms Level
BTCOL705_1	Construct a basic website using HTML and Cascading Style Sheets.	L3
BTCOL705_2	Build dynamic web page with validation using Java Script objects and by applying different event handling mechanisms.	L3
BTCOL705_3	Construct simple web pages in PHP	L4
BTCOL705_4	Understand the use of PHP as server side language and application of AJAX in web development.	L2

Course Outcomes (CO's): System Administration Lab Upon successful completion of this course, the students will be able to		Brooms Level
BTCOL706_1	Illustrate the role and responsibilities of a Linux system administration.	L3
BTCOL706_2	Make effective use of Linux utilities, and scripting languages.	L2
BTCOL706_3	Detect the problem and troubleshoot them.	L3
BTCOL706_4	Integrate network services on a Linux system	L3

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Course Outcomes (CO's): Big Data Analytics Lab Upon successful completion of this course, the students will be able to		Brooms Level
BTCOL707_1	Develop efficient algorithms for analyzing the data from large volumes.	L3
BTCOL707_2	Configure Hadoop and perform File Management Tasks	L3
BTCOL707_3	Apply MapReduce programs to real time issues like word count, weather dataset and matrix operation	L3
BTCOL707_4	Explore on Big Data applications Using spark, pig and Hive.	L3

Course Outcomes (CO's): Natural Language Processing Lab Upon successful completion of this course, the students will be able to		Brooms Level
BTCOL708C_1	To implement basic preprocessing of text	L3
BTCOL708C_2	To implement techniques of word level analysis	L3
BTCOL708C_3	To implement techniques of extracting information from text	L3
BTCOL708C_4	To implement techniques of text analytics	L3

Course Outcomes (CO's): Project Phase -I Upon successful completion of this course, the students will be able to		Brooms Level
BTCOL709_1	Solve real life problems by applying knowledge.	L1
BTCOL709_2	Analyze alternative approaches, apply and use most appropriate one for feasible solution	L3
BTCOL709_3	Write precise reports and technical documents .	L2
BTCOL709_4	Participate effectively in multi-disciplinary and heterogeneous teams exhibiting team work .	L3
BTCOL709_5	Establish Inter-personal relationships, conflict management and leadership quality	L3

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Course Outcomes (CO's): Field Training/Industrial Training		Brooms Level
Upon successful completion of this course, the students will be able to		
BTCOF609_1	Demonstrate competency in relevant field of engineering.	L3
BTCOF609_2	Demonstrate knowledge with ethical and professional responsibilities.	L3
BTCOF609_3	Apply appropriate techniques, resources and modern tools.	L3
BTCOF609_4	Communicate effectively and represent the processes in the industry.	L3

Course Outcomes (CO's): Social Networks		Brooms Level
Upon successful completion of this course, the students will be able to		
BTCOE801B_1	Understand a broad range of network concepts and theories.	L2
BTCOE801B_2	Analyse social network data using various software packages and social network techniques.	L4
BTCOE801B_3	Apply the social networking concepts for solving real-world social network issues.	L3
BTCOE801B_4	Apply Mining for behaviour of the users in the social network	L3

Course Outcomes (CO's): Cryptography & Network Security		Brooms Level
Upon successful completion of this course, the students will be able to		
BTCOE802B_1	Understand the basics of information security & mathematical foundations needed for cryptography and network security	L2
BTCOE802B_2	Explain and Compare various Cryptographic Techniques	L2
BTCOE802B_3	Compare, Understand and apply various Asymmetric Key Ciphers security techniques.	L2
BTCOE802B_4	To compare Modern Trends in Asymmetric Key Cryptography	L2
BTCOE802B_5	Design Secure applications and Inject secure coding in the developed applications and able to understand about the Intrusion, Viruses, firewalls and its configurations	L3

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Course Outcomes (CO's): Project Phase-II Upon successful completion of this course, the students will be able to		Brooms Level
BTCOE803_1	Reorganize the procedures of design, development with a concern for society, environment and ethics	L4
BTCOE803_2	Apply modern software tools to implement the software solution of the problem	L3
BTCOE803_3	Write precise reports and technical documents .	L2
BTCOE803_4	Apply modern software tools to design test cases and perform testing of the implemented software solution and deploy the software solution after successful testing	L3
BTCOE803_5	Apply Communication Knowledge effectively by participating in various competitions, publishing and presenting project work through conference / journal paper	L3

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DEPARTMENT OF CIVIL ENGINEERING

COURSE OUTCOMES (AY: 2024-25)

Second Year (B-Tech Civil)

BTBS301 Engineering Mathematics – III

Course Outcomes (COs): Upon successful completion of this course, the student will be able to:		Blooms Level
BTBS301_1	Apply the concepts and properties of Laplace transformation	L3
BTBS301_2	Apply the concepts of inverse Laplace Transform with its property to solve Linear Differential Equation with given initial conditions.	L3
BTBS301_3	Solve problems related to Fourier transform, Laplace transform and applications to Communication systems and Signal processing.	L3
BTBS301_4	Explain the concepts of PDE and their application	L3
BTBS301_5	Analyze conformal mappings, transformations and perform contour integration of complex functions in the study of electrostatics and signal processing.	L4

BTCVC302 Mechanics of Solids

Course Outcomes (COs): Upon successful completion of this course, the student will be able to:		Blooms Level
BTCVES 302_1	Explain the stress-strain analysis.	L3
BTCVES 302_2	Draw force distribution diagrams for members and determinate beams.	L2
BTCVES 302_3	Examine force deformation behaviour of bodies.	L3
BTCVES 302_4	Explain failure of principle stress and strain.	L3

BTCVC303 Building Construction & Drawing

Course Outcomes (COs): After successful completion of this course, the student will be able to:		Blooms Level
BTCVC303_1	Describe types of masonry structures	L2
BTCVC303_2	Explain components of building and their purposes.	L3
BTCVC303_3	Prepare plan, elevation and section of various structures.	L3
BTCVC303_4	Apply the principles of planning and by laws used for building	L3
BTCVC303_5	Prepare detailed working drawing for doors and windows.	L3

BTCVC304 Hydraulics I

Course Outcomes (COs): Upon successful completion of this course, the student will be able to:		Blooms Level
BTCVC304_1	Examine the various flow measuring devices.	L4
BTCVC304_2	Determine the properties of fluid and pressure and their	L3

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	measurement.	
BTCVC304_3	Explain fundamentals of pipe flow, losses in pipe and analysis of pipe network.	L3
BTCVC304_4	Analyse fluid flow phenomena observed in Civil Engineering systems.	L4
BTCVC304_5	Apply dimensional analysis for solving problems of fluid flow	L3

BTCVC305 Surveying

Course Outcomes (COs): Upon successful completion of this course, the student will be able to:		Blooms Level
BTCVC305_1	Apply chain surveying techniques for accurate measurement and mapping of land areas.	L3
BTCVC305_2	Apply compass and plane table surveying techniques for measuring bearings and areas in field surveys.	L3
BTCVC305_3	Compute accurately the ground elevations and areas using levelling techniques and planimeter tools.	L3
BTCVC305_4	Interpret angular measurements using a theodolite for precise surveying applications.	L3
BTCVC305_5	Explain the procedures in basic types of surveys for engineering projects.	L3

BTHM306 Soft Skill Development

Course Outcomes (COs): Upon successful completion of this course, the student will be able to:		Blooms Level
BTHM306_1	Explain the fundamentals of effective communication, including speaking skills, feedback, questioning techniques, and non-verbal communication to improve interpersonal proficiency.	L3
BTHM306_2	Analyze self-management techniques by recognizing personal strengths and weaknesses, setting goals, and managing emotions to enhance self-awareness and leadership qualities.	L4
BTHM306_3	Describe time management techniques through practical exercises, such as game-playing, to enhance productivity, punctuality, and the ability to meet targets effectively.	L2
BTHM306_4	Explain intrinsic motivation by adopting self-driven strategies, identifying needs, and shaping work methods to complete tasks independently and with inspiration.	L3
BTHM306_5	Evaluate interpersonal and computing skills to build positive relationships, demonstrate empathy, and design impactful presentations using effective tools and techniques.	L5

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**DEPARTMENT OF CIVIL ENGINEERING****BTCVL307 Mechanics of Solids Lab**

Course Outcomes (COs): Upon successful completion of this course, the student will be able to:		Blooms Level
BTCVL307_1	Evaluate Young's Modulus, tensile strength, compressive strength, shear strength, torsional strength of given specimen	L3
BTCVL307_2	Evaluate Flexural strength of given specimen	L3
BTCVL307_3	Apply graphical method to find principal stress parameters	L3
BTCVL307_4	Communicate effectively subject concern knowledge.	L3

BTCVL308 Hydraulics I Laboratory

Course Outcomes (COs): Upon successful completion of this course, the student will be able to:		Blooms Level
BTCVL308_1	Analyze the properties of fluids and their verification.	L4
BTCVL308_2	Explain empirical behaviour of fluids.	L3
BTCVL308_3	Apply principles of hydraulics while working in field.	L3

BTCVL309 Surveying Laboratory

Course Outcomes (COs): Upon successful completion of this course, the student will be able to:		Blooms Level
BTCVL309_1	Practice the theodolite along with chain/tape, compass on the field.	L3
BTCVL309_2	Apply geometric and trigonometric principles of basic surveying calculations	L3
BTCVL309_3	Prepare a survey plan, taking accurate measurements, field data, and adjustment of errors in record book.	L3
BTCVL309_4	Experiment field procedures in basic types of surveys, as part of a surveying team.	L3
BTCVL309_5	Apply drawing techniques in the development of a topographic map.	L3

BTES210P Internship

Course Outcomes (COs): Upon successful completion of this course, the student will be able to:		Blooms Level
BTES210P_1	Observe the various construction activities and its significance.	L2
BTES210P_2	Identify the various construction materials and its properties on construction site.	L2
BTES210P_3	Practice as an individual or as a team member to complete the construction projects.	L3

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BTES210P_4	Analyse essential technical information, working drawings, material quantity and method to complete the construction work.	L4
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BTCVC401 Building Planning and Drawing

Course Outcomes (COs): Upon successful completion of this course, the student will be able to:		Blooms Level
BTCVC401_1	Discuss a building plan considering various principles of building plannings.	L2
BTCVC401_2	Analyse building plan considering various byelaws of concern governing body.	L4
BTCVC401_3	Discuss various utility requirements in buildings.	L2
BTCVC401_4	Relate various techniques for good acoustics.	L2
BTCVC401_5	Observe various techniques of green buildings.	L2

BTCVC402 Environmental Engineering

Course Outcomes (COs): Upon successful completion of this course, the student will be able to:		Blooms Level
BTCVC402_1	Apply the water treatment concepts & methods.	L3
BTCVC402_2	Discuss basic process design of water & waste water treatment plants.	L2
BTCVC402_3	Explain the Waste water treatment concepts & methods.	L3
BTCVC402_4	Discuss the solid waste management concepts.	L2

BTCVC403 Structural Mechanics I

Course Outcomes (COs): After successful completion of this course, the student will be able to:		Blooms Level
BTCVC403_1	Describe the concept of structural analysis, degree of	L2
BTCVC403_2	Calculate slopes and deflection at various locations for different	L3
BTCVC403_3	Compute determinate and indeterminate trusses and calculate forces in the members of trusses	L3
BTCVC403_4	Compute the distribution of the moments the in continuous beam and frame	L3

BTCVC404 Water Resources Engineering

Course Outcomes (COs): Upon successful completion of this course, the student will be able to:		Blooms Level
BTCVC404_1	Explain need of Irrigation in India and water requirement as per farming practice in India.	L2

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BTCVC404_2	Describe various irrigation structures and schemes.	L2
BTCVC404_3	Illustrate basis for design of irrigation schemes.	L3
BTCVC404_4	Illustrate techniques of Water Resources Planning and Management.	L3

BTCVC405 Hydraulics II

Course Outcomes (COs): Upon successful completion of this course, the student will be able to:		Blooms Level
BTCVC405_1	Calculate open channel sections in a most economical way.	L3
BTCVC405_2	Illustrate about the non-uniform flows in open channel and the characteristics of hydraulic jump.	L3
BTCVC405_3	Apply momentum principle of impact of jets on plane.	L3
BTCVC405_4	Classify pumps and turbines as per requirements.	L4

BTCVC406 Engineering Geology

Course Outcomes (COs): Upon successful completion of this course, the student will be able to:		Blooms Level
BTCVC406_1	Identify the different land forms which are formed by various geological agents.	L3
BTCVC406_2	Identify the origin, texture and structure of various rocks and physical properties of mineral.	L3
BTCVC406_3	Categorize distinct geological structures which have influence on the civil engineering structure.	L4
BTCVC406_4	Explain how the various geological conditions affect the design parameters of structures.	L2

BTCVL407 Building Planning and CAD Lab

Course Outcomes (COs): Upon successful completion of this course, the student will be able to:		Blooms Level
BTCVL407_1	Prepare a plan, elevation and section of framed structures.	L3
BTCVL407_2	Describe concept of rain water harvesting.	L2
BTCVL407_3	Apply knowledge of usage of modern tools.	L3
BTCVL407_4	Develop report writing skill	L3

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Faculty of Engineering

DEPARTMENT OF CIVIL ENGINEERING

BTCVL408 Environmental Engineering Lab

Course Outcomes (COs): Upon successful completion of this course, the student will be able to:		Blooms Level
BTCVL408_1	Determine the pollutant concentration in water.	L3
BTCVL408_2	Determine the pollutant concentration in wastewater.	L3
BTCVL408_3	Illustrate the working of water treatment units.	L3

BTCVL409 Hydraulics II Lab

Course Outcomes (COs): Upon successful completion of this course, the student will be able to:		Blooms Level
BTCVL409_1	Describe various properties of fluids and measurement techniques.	L2
BTCVL409_2	Explain calibrations of various flow measuring devices.	L3
BTCVL409_3	Observe mechanism of hydraulic jump, various jets and pumps.	L2

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DEPARTMENT OF CIVIL ENGINEERING

Third Year (B-Tech Civil)

BTCVC501 Design of Steel Structures

Course Outcomes (COs): After successful completion of this course, the student will be able to:		Blooms Level
BTCVC501_1	Compute the design loads and the stresses developed in the steel member.	L3
BTCVC501_2	Analyze and design the various connections and identify the potential failure modes.	L4
BTCVC501_3	Analyze and design various tension, compression and flexural members.	L4
BTCVC501_4	Discuss provisions in relevant BIS Codes.	L2

BTCVC502 Geotechnical Engineering

Course Outcomes (COs): Upon successful completion of this course, the student will be able to:		Blooms Level
BTCVC502_1	Explain different soil properties and behavior.	L3
BTCVC502_2	Discuss stresses in soil and permeability and seepage aspects.	L2
BTCVC502_3	Develop ability to take up soil design of various foundations.	L3
BTCVC502_4	Apply Earth Pressure and Consolidation aspects for design of various foundations.	L3

BTCVC503 Structural mechanics II

Course Outcomes (COs): Upon successful completion of this course, the student will be able to:		Blooms Level
BTCVC503_1	Analyze the determinant structure by matrix method.	L4
BTCVC503_2	Explain the principles and concepts related to finite element methods.	L2
BTCVC503_3	Analyze the determinant structure by influence line diagram.	L4
BTCVC503_4	Analyze cables, arches and suspension bridges	L4

BTCVC504 Concrete Technology

Course Outcomes (COs): Upon successful completion of this course, the student will be able to:		Blooms Level
BTCVC504_1	Discuss the various types and properties of ingredients of concrete.	L3
BTCVC504_2	Explain the effect of admixtures on the behavior of the concrete.	L3
BTCVC504_3	Prepare concrete design mix for various grades of concrete.	L3

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BTCVC504_4	Describe the procedure of determining the properties of fresh and hardened concrete.	L3
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BTHM505 Project management

Course Outcomes (COs): Upon successful completion of this course, the student will be able to:		Blooms Level
BTHM505_1	Explain various steps in project Management with different types of charts.	L3
BTHM505_2	Construct network by using CPM and PERT method	L3
BTHM505_3	Determine the optimum duration of project with the help of various time estimates	L3
BTHM505_4	Explain the concept of engineering economics, economic comparisons, and linear break-even analysis problems	L2
BTHM505_5	Understand the concept of total quality Management including Juran and Deming's philosophy	L2

BTCVPE506G Material Testing & Evaluation

Course Outcomes (COs): Upon successful completion of this course, the student will be able to:		Blooms Level
BTCVPE506G_1	Explain various types, uses, advantages and disadvantages of basic construction materials.	L3
BTCVPE506G_2	Describe the concrete materials as per IS standards,	L2
BTCVPE506G_3	Discuss various composite materials used in construction.	L2
BTCVPE506G_4	Explain various types of construction techniques, admixtures, epoxy, in various types of concretes.	L3
BTCVPE506G_5	Interpret various concrete testing techniques used in construction.	L3

BTCVES507 Software Applications in Civil Engineering

Course Outcomes (COs): Upon successful completion of this course, the student will be able to:		Blooms Level
BTCVES507_1	Analyze and design RCC structure components.	L4
BTCVES507_2	Explain several software's used in civil engineering.	L3
BTCVES507_3	Apply different software's for various issues in civil engineering	L3

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**DEPARTMENT OF CIVIL ENGINEERING****BTCVL508 SDD of Steel Structures Lab**

Course Outcomes (COs): After successful completion of this course, the student will be able to:		Blooms Level
BTCVL508_1	Calculate different loads and perform load combination analysis for different Steel Structures as per codal provisions.	L3
BTCVL508_2	Apply the principles, procedures and current code requirements for the design of Compression, Tension members	L3
BTCVL508_3	Practice in a group for design-oriented task related to project.	L3
BTCVL508_4	Develop skills of technical report writing and comprehension of results etc.	L3

BTCVL509 Geotechnical Engineering Lab

Course Outcomes (COs): Upon successful completion of this course, the student will be able to:		Blooms Level
BTCVL509_1	Examine different engineering properties of soil.	L3
BTCVL509_2	Classify soils based on standard geotechnical engineering practices.	L4
BTCVL509_3	Demonstrate Laboratory compaction and in-place density tests.	L4
BTCVL509_4	Perform and interpret direct shear tests and estimate shear strength parameters.	L4

BTCVL510 Concrete Technology Lab.

Course Outcomes (COs): Upon successful completion of this course, the student will be able to:		Blooms Level
BTCVL510_1	Examine tests on ingredients of concrete.	L3
BTCVL510_2	Examine tests on fresh and hardened concrete.	L3
BTCVL510_3	Practice trial concrete mixes by various methods.	L3
BTCVL510_4	Compute Non-Destructive Test on concrete structural	L3

BTCVP410 Field Training

Course Outcomes (COs): Upon successful completion of this course, the student will be able to:		Blooms Level
BTCVP410_1	Observe the various construction activities and its significance.	L2
BTCVP410_2	Identify the various construction materials and its properties on construction site.	L2
BTCVP410_3	Practice as an individual or as a team member to complete the construction projects.	L3

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BTCVP410_4	Analyse essential technical information, working drawings, material quantity and method to complete the construction work.	L4
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BTCVC601 Design of RC Structures

Course Outcomes (COs): After successful completion of this course, the student will be able to:		Blooms Level
BTCVC601_1	Discuss to the various design philosophies used for design of reinforced concrete.	L2
BTCVC601_2	Analyze and design the reinforced concrete slab using limit state and working state method.	L4
BTCVC601_3	Analyze and design the reinforced concrete beam using limit state and working state method.	L4
BTCVC601_4	Analyze and design the reinforced concrete column using limit state and working state method.	L4

BTCVC602 Foundation Engineering

Course Outcomes (COs): Upon successful completion of this course, the student will be able to:		Blooms Level
BTCVC602_1	Predict soil behaviour under the application of loads and come up with appropriate solutions to foundation design queries.	L3
BTCVC602_2	Analyze the stability of slope by theoretical and graphical methods.	L4
BTCVC602_3	Analyze the results of in-situ tests and transform measurements and associated uncertainties into relevant design parameters.	L4
BTCVC602_4	Develop the concepts of allowable stress design, appropriate factors of safety, margin of safety, and reliability	L3

BTCVC603 Transportation Engineering

Course Outcomes (COs): Upon successful completion of this course, the student will be able to:		Blooms Level
BTCVC603_1	Explain various types of transportation systems and their history of the development.	L3
BTCVC603_2	Construct highway geometrics.	L3
BTCVC603_3	Determine the quality of Materials used for pavements.	L3
BTCVC603_4	Interpret to various types of pavements	L3
BTCVC603_5	Select the pavements by considering various aspects associated with traffic safety measures.	L4

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**DEPARTMENT OF CIVIL ENGINEERING****BTCVPE604F Structural Audit**

Course Outcomes (COs):		Blooms Level
After successful completion of this course, the student will be able to:		
BTCVC604F_1	Summarize the knowledge of Bye laws, procedure of Structural audit and study the typical problems in structures	L5
BTCVC604F_2	Examine of causes and types of deterioration in structures.	L3
BTCVC604F_3	Develop skills for use of various Non-destructive tests required during auditing of structures.	L3
BTCVC604F_4	Judge strength evaluation of existing structures.	L3
BTCVC604F_5	Explain legal procedure to conduct structural audits.	L3
BTCVC604F_6	Prepare a Structural audit report.	L3

BTCVOE605D Composite Materials

Course Outcomes (COs):		Blooms Level
Upon successful completion of this course, the student will be able to:		
BTCVOE605D_1	Describe fundamental knowledge in mechanical analysis.	L2
BTCVOE605D_2	Illustrate design of structures made of composite materials.	L3
BTCVOE605D_3	Discuss suitable materials in relation with the project.	L2
BTCVOE605D_4	Illustrate Fabrication methods of composite materials.	L3

BTHM606 Indian Constitution

Course Outcomes (COs):		Blooms Level
Upon successful completion of this course, the student will be able to:		
BTHM606_1	Explain about salient features of the Constitution of India	L3
BTHM606_2	Discuss fundamental rights, duties and federal structure of Constitution of India	L2
BTHM606_3	Explain about provisions of role responsibilities of State administration in Constitution of India	L3
BTHM606_4	Describe about provisions of role responsibilities of Local administration in Constitution of India	L2
BTHM606_5	Summarize about role and functioning of election commission under constitution of India	L5

BTCVL607 SDD of RC Structures Lab

Course Outcomes (COs):		Blooms Level
BTCVL607_1	Calculate different loads and perform load combination analysis for different RC buildings as per codal provisions.	L3
BTCVL607_2	Apply the principles, procedures and current code requirements for the design of RC beams, columns, slab, Footings.	L3
BTCVL607_3	Practice in a group for design oriented task related to project.	L3
BTCVL607_4	Develop skills of technical report writing and comprehension of	L3

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BTCVL607_5	Apply the knowledge in real life problems	L3
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BTCVL608 Transportation Engineering Lab

Course Outcomes (COs): Upon successful completion of this course, the student will be able to:		Blooms Level
BTCVL608_1	Examine tests on various road construction materials.	L3
BTCVL608_2	Construct CBR tests on local soils to determine subgrade properties needed for roadways.	L3
BTCVL608_3	Communicate effectively about laboratory work in both orally and writing	L2
BTCVL608_4	Work effectively in team to perform and findings the results.	L2

BTCVP609 Mini Project

Course Outcomes (COs): After successful completion of this course, the student will be able to:		Blooms Level
BTCVP609_1	Identify thrust area in civil engineering and finalize problem statement	L2
BTCVP609_2	Prepare methodology and give conclusion on the basis of results.	L3
BTCVP609_3	Practice as an individual or in a team in development of technical projects.	L2
BTCVP609_4	Apply project management skills (scheduling work and working within the confines of a deadline).	L3
BTCVP609_5	Summarize technical information by means of report and presentation.	L5

BTCVP610 Internship

Course Outcomes (COs): Upon successful completion of this course, the student will be able to:		Blooms Level
BTCVP610_1	Observe the various construction activities and its significance.	L2
BTCVP610_2	Identify the various construction materials and its properties on construction site.	L2
BTCVP610_3	Practice as an individual or as a team member to complete the construction projects.	L3
BTCVP610_4	Analyse essential technical information, working drawings, material quantity and method to complete the construction work.	L4

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**DEPARTMENT OF CIVIL ENGINEERING****Final Year (B-Tech)****BTCVC701 Design of RC & PSC Structures**

Course Outcomes (COs): After successful completion of this course, the student will be able to:		Blooms Level
BTCVC701_1	Analyze and design of the beam sections subjected to torsion.	L4
BTCVC701_2	Analyze and design of axially and eccentrically loaded column and construct the interaction diagram for them.	L4
BTCVC701_3	Discuss various concepts, systems and losses in pre-stressing.	L2
BTCVC701_4	Analyze and design the rectangular and symmetrical I-section pre-stressed beam / girders.	L4

BTCVC702 Infrastructure Engineering

Course Outcomes (COs): Upon successful completion of this course, the student will be able to:		Blooms Level
BTCVC702_1	Discuss about the basics and design of various components of railway engineering, mass rapid transit system.	L2
BTCVC702_2	Explain the types and functions of tracks, junctions and railway stations.	L3
BTCVC 702_3	Describe the aircraft characteristics, planning and components	L2
BTCVC 702_4	Explain the types and components of docks and harbors.	L3
BTCVC 702_5	Review the tunnel engineering.	L2

BTCVC703 Construction Techniques

Course Outcomes (COs): Upon successful completion of this course, the student will be able to:		Blooms Level
BTCVC703_1	Discuss the planning of new project with site accessibility and services required.	L2
BTCVC703_2	Choose the various civil construction equipment's.	L3
BTCVC703_3	Explain with layout of RMC plant, production, capacity and operation process.	L2
BTCVC703_4	Identify various aspect of road construction, construction of diaphragm walls, railway track construction etc.	L3

BTCVC704 Professional Practices

Course Outcomes (COs): Upon successful completion of this course, the student will be able to:		Blooms Level
BTCVC704_1	Prepare estimate for various structures considering rates analysis.	L3
BTCVC704_2	Calculate quantities of various item work as per specifications	L3

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	and prepare bills.	
BTCVC704_3	Discuss various types of contracts, accounts and methods in PWD.	L3
BTCVC704_4	Prepare and discuss tender and tender documents.	L3
BTCVC704_5	Compare various methods of valuation and factors affecting for valuation.	L4

BTCVE705I Bridge Engineering

Course Outcomes (COs): Upon successful completion of this course, the student will be able to:		Blooms Level
BTCVE705I_1	Explain various components of bridges and its types.	L3
BTCVE705I_2	Discuss site selection criteria for construction of bridge.	L2
BTCVE705I_3	Calculate various forces acting on bridges	L3
BTCVE705I_4	Analyze bridge super structures using different analysis techniques.	L4
BTCVE705I_5	Describe importance of different types of bridge bearings.	L2

BTCVOE706G Bamboo Construction Technology

Course Outcomes (COs): Upon successful completion of this course, the student will be able to:		Blooms Level
BTCVOE706G_1	Explain need of Bamboo in construction.	L3
BTCVOE706G_2	Discuss bamboo as a construction material.	L2
BTCVOE706G_3	Develop construction techniques in bamboo	L3
BTCVOE706G_4	Apply knowledge of Bamboo anatomy and Properties in Practical design of Bamboo Projects.	L3

BTHM707A Essence of Indian Traditional Knowledge

Course Outcomes (COs): Upon successful completion of this course, the student will be able to:		Blooms Level
BTHM707A_1	Discuss the concept of an education system, protecting traditional knowledge, Artistic Traditions and its importance.	L2
BTHM707A_2	Explain Indian Linguistic Tradition and Holistic Health care activities.	L3
BTHM707A_3	Observe Philosophical Traditions in ancient India.	L2
BTHM707A_4	Explain the concept of ancient Indian science and technology in different sectors.	L3
BTHM707A_5	Analyze the case studies of development of engineering services.	L4

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**DEPARTMENT OF CIVIL ENGINEERING****BTCVL708 Design & Drawing of Prestressed Concrete**

Course Outcomes (COs): After successful completion of this course, the student will be able to:		Blooms Level
BTCVL708_1	Classify different types of losses.	L2
BTCVL708_2	Explain various concepts, systems and in pre-stressing.	L3
BTCVL708_3	Compute the behaviour of the beam sections subjected to torsion.	L3
BTCVL708_4	Design and drawing of slab and girders.	L4
BTCVL708_5	Discuss technical information by means of report and presentation.	L2

BTCVL709 Professional Practices Laboratory

Course Outcomes (COs): Upon successful completion of this course, the student will be able to:		Blooms Level
BTCVL709_1	Calculate estimates for different types of structure.	L3
BTCVL709_2	Prepare the rate analysis as per specification of task.	L3
BTCVL709_3	Prepare different various types of contract and tender documents.	L3
BTCVL709_4	Calculate land & building valuation.	L3

BTCVS710 Seminar

Course Outcomes (COs): Upon successful completion of this course, the student will be able to:		Blooms Level
BTCVS710_1	Discuss road components and materials.	L2
BTCVS710_2	Identify construction machinery and their functions.	L2
BTCVS710_3	Explain road construction phases and their purpose.	L3
BTCVS710_4	Apply road construction knowledge to site visits.	L3

BTCVP711 Project Stage I

Course Outcomes (COs): After successful completion of this course, the student will be able to:		Blooms Level
BTCVP711_1	Identify thrust area in civil engineering and finalize problem	L2
BTCVP711_2	Explain the literature to search for technical information from various resources on selected problem.	L3
BTCVP711_3	Practice work as an individual or in a team in development of technical projects.	L3
BTCVP711_4	Apply project management skills (scheduling work and working within the confines of a deadline).	L3
BTCVP711_5	Summarize technical information by means of report and presentation.	L5

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**DEPARTMENT OF CIVIL ENGINEERING****BTCVSS801D Maintenance and Repair of Concrete Structures NPTEL**

Course Outcomes (COs): Upon successful completion of this course, the student will be able to:		Blooms Level
BTCVSS801D _1	Explain Importance of maintenance of concrete structures and corrosion of metal.	L3
BTCVSS801D _2	Illustrate durability parameters of concrete structure.	L3
BTCVSS801D _3	Explain methods of strength evaluation concrete structures.	L3
BTCVSS801D _4	Describe the significance of service/exposure properties of repair material and repair techniques.	L3
BTCVSS801D _5	Select suitability of strengthening techniques for concrete structure.	L3

BTCVSS802C Remote Sensing Essentials NPTEL

Course Outcomes (COs): Upon successful completion of this course, the student will be able to:		Blooms Level
BTCVSS802C _1	Explain various remote sensing techniques and stages of remote sensing.	L3
BTCVSS802C _2	Discuss various types and platform of remote sensing	L3
BTCVSS802C _3	Explain process of digital image processing for supervised and unsupervised classification.	L3
BTCVSS802C _4	Describe application of remote sensing and GIS in civil engineering.	L3

BTCVP803 Project Stage II

Course Outcomes (COs): After successful completion of this course, the student will be able to:		Blooms Level
BTCVP803 _1	Identify thrust area in civil engineering and finalize problem	L2
BTCVP803 _2	Formulate the methodology and give conclusion on the basis of results.	L2
BTCVP803 _3	Practice as an individual or in a team in development of technical projects.	L3

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BTCVP803 _4	Apply project management skills (scheduling work and working within the confines of a deadline).	L2
BTCVP803 _5	Summarize technical information by means of report and presentation.	L5

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**Department of Electronics and Telecommunication****COURSE OUTCOMES****Second Year (B-Tech)**

Course Outcomes(COs): Upon successful completion of this course, the student will be able to:		Blooms Level
BTBS301_1	Solve higher order linear differential equation using appropriate techniques for modeling and analyzing engineering problem.	L3
BTBS301_2	Solve problems related to Fourier transform, Laplace transform and applications to Communication systems and Signal processing valued functions.	L3
BTBS301_3	Obtain Interpolating polynomials, numerically differentiate and integrate functions, numerical solutions of differential equations using single step and multi-step iterative methods used in modern scientific computing.	L3
BTBS301_4	Perform vector differentiation and integration, analyze the vector fields and apply to Electromagnetic fields. Divergence & curl in various engineering streams.	L4
BTBS301_5	Analyze conformal mappings, transformations and perform contour integration of complex functions in the study of electrostatics and signal processing.	L4

Course Outcomes(COs): Upon successful completion of this course, the student will be able to:		Blooms Level
BTETC302_1	Comply and verify parameters after exciting devices by any stated method.	L3
BTETC302_2	Implement circuit and test the performance.	L3
BTETC302_3	Analyze BJT, JFET and MOSFET for various applications.	L4
BTETC302_4	Analyze Feedback amplifiers and oscillators.	L4

Course Outcomes(COs): Upon successful completion of this course, the student will be able to:		Blooms Level
BTETC303_1	Use the basic logic gates and various reduction techniques of digital logic circuit in detail.	L3
BTETC303_2	Design Combinational and Sequential Circuits	L3
BTETC303_3	Design and Implement hardware circuits to test performance and application	L3
BTETC303_4	Understand the architecture and use of VHDL for basic operations and Simulate using simulation software	L4

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Course Outcomes(COs): Upon successful completion of this course, the student will be able to:		Blooms Level
BTES304_1	Formulate and then analyze the working of any electrical machine using mathematical model under loaded and unloaded conditions.	L4
BTES304_2	Analyze the response of any electrical machine	L4
BTES304_3	Troubleshoot the operation of an electrical machine.	L2
BTES304_4	Select a suitable measuring instrument for a given application.	L1
BTES304_5	Select the appropriate sensor for a given application	L2

Course Outcomes(COs): Upon successful completion of this course, the student will be able to:		Blooms Level
BTETC401_1	Apply knowledge of mathematics to solve numerical based on network simplification and it will be used to analyze the same.	L3
BTETC401_2	Design passive filters and attenuators theoretically and practically. To apply knowledge for design of active filters as well as digital filters and even extend this to advance adaptive filters.	L3
BTETC401_3	Identify issues related to transmission of signals, analyze different RLC networks.	L2
BTETC401_4	Explain the formulation of state space models for electrical network	L2

Course Outcomes(COs): Upon successful completion of this course, the student will be able to:		Blooms Level
BTETC402_1	Understand mathematical description and representation of continuous and discrete time signals and systems.	L2
BTETC402_2	Develop input output relationship for linear shift invariant system and understand the convolution operator for continuous and discrete time system.	L2
BTETC402_3	Understand and resolve the signals in frequency domain using Fourier series and Fourier transforms	L2
BTETC402_4	Understand the limitations of Fourier transform and need for Laplace transform and develop the ability to analyze the system in s-domain.	L2

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Course Outcomes(COs): Upon successful completion of this course, the student will be able to:		Blooms Level
BTHM403_1	Students will be able to understand the history of human rights	L2
BTHM403_2	Students will learn to respect others caste, religion, region and culture	L2
BTHM403_3	Students will be able to aware of their rights as Indian citizen	L2
BTHM403_4	Students will be able to understand the importance of groups and communities in the society.	L2
BTHM403_5	Students will be able to realize the philosophical and cultural basis and historical perspectives of human rights.	L2

Course Outcomes(COs): Upon successful completion of this course, the student will be able to:		Blooms Level
BTBS404_1	Understand representation of random signals.	L2
BTBS404_2	Investigate characteristics of random processes.	L4
BTBS404_3	Make use of theorems related to random signals.	L3
BTBS404_4	To understand propagation of random signals in LTI systems.	L2

Course Outcomes(COs): Upon successful completion of this course, the student will be able to:		Blooms Level
BTETPE405A_1	Able to solve algebraic and transcendental equations by using numerical techniques and will be able to compare different numerical techniques used for this purpose and also will be able to choose a proper one as per the requirement of the problem	L3
BTETPE405A_2	Able to solve a system of linear equations with any number of variables using different direct and iterative numerical techniques.	L3
BTETPE405A_3	Understand the concept of interpolation, finite difference operators and their relations, and can apply different interpolation techniques on equi-spaced or non equi-spaced data values.	L2
BTETPE405A_4	Prepare them to write computer programs for the numerical computational techniques.	L6
BTETPE405A_5	Understand application of the NMCP course in many engineering core subjects like signal processing, digital communication, numerical techniques in electromagnetics etc.	L2

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Faculty of Engineering

Department of Electronics and Telecommunication

BTETPE405A_6	Understand procedure-oriented and object-oriented programming concepts.	L2
BTETPE405A_7	Capable of writing C and C++ programs efficiently.	L2

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Department of Electronics and Telecommunication

Third Year (B-Tech)

Course Outcomes(COs): Upon successful completion of this course, the student will be able to:		Blooms Level
BTETC501_1	Understand characteristics and wave propagation on high frequency transmission lines	L2
BTETC501_2	Carryout impedance transformation on TL	L2
BTETC501_3	Use sections of transmission line sections for realizing circuit elements	L2
BTETC501_4	Characterize uniform plane wave	L3
BTETC501_5	Calculate reflection and transmission of waves at media interface.	L4
BTETC501_6	Analyze wave propagation on metallic waveguides in modal form	L4
BTETC501_7	Understand principle of radiation and radiation characteristics of an antenna	L2

Course Outcomes(COs): Upon successful completion of this course, the student will be able to:		Blooms Level
BTETC502_1	Understand use of different transforms and analyze the discrete time signals and systems.	L2
BTETC502_2	Realize the use of LTI filters for filtering different real-world signals.	L3
BTETC502_3	Capable of calibrating and resolving different frequencies existing in any signal.	L3
BTETC502_4	Design and implement multistage sampling rate converter.	L3
BTETC502_5	Design and implement n of different types of digital filters for various applications.	L4

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Department of Electronics and Telecommunication

Course Outcomes(COs): Upon successful completion of this course, the student will be able to:		Blooms Level
BTETC503_1	Understand and identify the fundamental concepts and various components of analog communication system , compare and constraints the strengthens & weakness of various communication system	L2
BTETC503_2	Understand the concepts of modulation and demodulation techuenics and design circuits to generate modulated and demodulated wave.	L2 and L6
BTETC503_3	Equip students with various issues related to analog communication such as modulation ,demodulation ,transmitters and receivers and noise performance	L2
BTETC503_4	Understand the concept of modulation and demodulation techniques of Angle ,Frequency and Phase	L2
BTETC503_5	Explain signal to noise ratio ,noise figure ,noise temperature for signal and cascaded stages in communication system .	L3

Course Outcomes(COs): Upon successful completion of this course, the student will be able to:		Blooms Level
BTETPE504A_1	Understand the characteristics of IC and Op-Amp and identify the internal structure.	L2
BTETPE504A_2	Understand the role of OPAMP in different signal conditioning circuits	L2
BTETPE504A_3	Derive and determine various performances-based parameters and their significance for Op-Amp.	L4
BTETPE504A_4	Verify parameters after exciting IC by any stated method. Analyze and identify the closed loop stability considerations and I/O limitations.	L4
BTETPE504A_5	Analyze and identify linear and nonlinear applications of Op-Amp.	L4

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Department of Electronics and Telecommunication

Course Outcomes(COs): Upon successful completion of this course, the student will be able to:		Blooms Level
BTETOE505A_1	To introduce the element of control system and their modeling using various Techniques	L2
BTETOE505A_2	To introduce methods for analyzing the time response ,frequency response and the stability of system	L2 and L6
BTETOE505A_3	To introduce the concept of root locus ,Bode plots , Nyquist plots	L2
BTETOE505A_4	To introduce the state variable analysis methods	L2
BTETOE505A_5	To introduce concepts of PID controllers and Digital and Control System	L3
BTETOE505A_6	To introduce concepts of programmable logic controller	L3

Course Outcomes(COs): Upon successful completion of this course, the student will be able to:		Blooms Level
BTETC601_1	Formulate the wave equation and solve it for uniform plane wave.	L3
BTETC601_2	Analyze the given wire antenna and its radiation characteristics.	L4
BTETC601_3	Identify the suitable antenna for a given communication system.	L1

Course Outcomes(COs): Upon successful completion of this course, the student will be able to:		Blooms Level
BTETC602_1	Analyze the performance of a baseband and pass band digital communication system in terms of error rate and spectral efficiency.	L2
BTETC602_2	Perform the time and frequency domain analysis of the signals in a digital communication system.	L2
BTETC602_3	Select the blocks in a design of digital communication system.	L1
BTETC602_4	Analyze Performance of spread spectrum communication system.	L4

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Faculty of Engineering



Department of Electronics and Telecommunication

Course Outcomes(COs): Upon successful completion of this course, the student will be able to:		Blooms Level
BTETPE603A_1	Explain the architecture ,instruction set and working of microprocessor and microcontroller	L2
BTETPE603A_2	Apply assembly language programming to solve basic computation and control problem	L3
BTETPE603A_3	Analyze the interfacing of microprocessor with peripherals	L4
BTETPE603A_4	Analyze the interfacing of microcontroller with peripherals	L4
BTETPE603A_5	Design embedded applications	L4

Course Outcomes(COs): Upon successful completion of this course, the student will be able to:		Blooms Level
BTETOE604C_1	To master the terminology and concepts of the OSI reference model and the TCP-IP reference model.	L2
BTETOE604C_2	To master the concepts of protocols, network interfaces, and design/performance issues in local area networks and wide area networks.	L2
BTETOE604C_3	To be familiar with wireless networking concepts, contemporary issues in networking technologies, network tools and network programming.	L3
BTETOE604C_4	For a given requirement (small scale) of wide-area networks (WANs), local area networks (LANs) and Wireless LANs (WLANs) design it based on the market available component. Also for defined problem based on TCP/IP protocol develop the network programming.	L3
BTETOE604C_5	Configure DNS DDNS, TELNET, EMAIL, File Transfer Protocol (FTP), WWW, HTTP, SNMP, Bluetooth, Firewalls using open source available software and tools.	L4

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Department of Electronics and Telecommunication

Course Outcomes(COs): Upon successful completion of this course, the student will be able to:		Blooms Level
BTHM605_1	Developed skills and preparedness for aptitude tests	L3
BTHM605_2	Developed with essential communication skills (writing, verbal and non-verbal)	L3
BTHM605_3	Make the use of the presentation skill and be ready for facing interviews	L3
BTHM605_4	Build team and lead it for problem solving.	L3

Course Outcomes(COs): Upon successful completion of this course, the student will be able to:		Blooms Level
BTETL606_1	Perform assembly language programming of 8085 microprocessor.	L2
BTETL606_2	Perform assembly and C language programming of 8051 microcontroller.	L2 and L6
BTETL606_3	Perform experiment on interfacing of devices with 8051 microcontroller.	L2
BTETL606_4	To design equipment's related to digital modulation and demodulation schemes.	L6
BTETL606_5	To identified different line coding techniques and demonstration the concepts.	L3

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Department of Electronics and Telecommunication

Final Year (B-Tech)

Course Outcomes(COs): Upon successful completion of this course, the student will be able to:		Blooms Level
BTETC701_1	Analyze the performance of a baseband and pass band digital communication system in terms of error rate and spectral efficiency.	L2
BTETC701_2	Perform the time and frequency domain analysis of the signals in a digital communication system.	L3
BTETC701_3	Select the blocks in a design of digital communication system.	L2
BTETC701_4	Analyze Performance of spread spectrum communication system.	L3

Course Outcomes(COs): Upon successful completion of this course, the student will be able to:		Blooms Level
BTETPE702C_1	Understand the fundamental principles of satellite communication	L2
BTETPE702C_2	Analyze satellite orbits and orbital mechanics	L4
BTETPE702C_3	Understand the satellite construction and space segment components.	L2
BTETPE702C_4	Design the satellite link and apply link budget equation.	L4
BTETPE702C_5	Compute access methods and applications of satellite communication	L3

Course Outcomes(COs): Upon successful completion of this course, the student will be able to:		Blooms Level
BTETPE703A_1	Suggest design approach using advanced controllers to real-life situations.	L2
BTETPE703A_2	Design interfacing of the systems with other data handling / processing systems.	L3
BTETPE703A_3	Appreciate engineering constraints like energy dissipation, data exchange speeds etc.	L2
BTETPE703A_4	Get to know the hardware – software co design issues and testing methodology for embedded system.	L3

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Faculty of Engineering



Department of Electronics and Telecommunication

Course Outcomes(COs): Upon successful completion of this course, the student will be able to:		Blooms Level
BTETPE704E_1	Identification of key elements of mechatronics system and its representation in terms of block diagram.	L1
BTETPE704E_2	Understanding the concept of signal processing and use of interfacing systems such as ADC, DAC, digital I/O and Sensors, Actuators using appropriate DAQ micro-controller.	L2
BTETPE704E_3	Time and Frequency domain analysis of system model (for control application).	L4
BTETPE704E_4	PID control implementation on real time systems.	L3
BTETPE704E_5	Development of PLC ladder programming and implementation of real life system.	L3

Course Outcomes(COs): Upon successful completion of this course, the student will be able to:		Blooms Level
BTHM705_1	The students would be able to understand and define basic terminology used in finance and accounts	L2
BTHM705_2	The students would be able to prepare& appraise Financial Statements and evaluate a company in the light of different measurement systems	L5
BTHM705_3	The students would be able to analyze the risk and return of alternative sources of financing.	L4
BTHM705_4	Estimate cash flows from a project, including operating, net working capital, and capital spending.	L5
BTHM705_5	To estimate the required return on projects of differing risk ,to estimate the cash flows from an investment project, calculate the appropriate discount rate, determine the value added from the project, and make a recommendation to accept or reject the project	L5

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Course Outcomes(COs): Upon successful completion of this course, the student will be able to:		Blooms Level
BTETP709_1	Apply the knowledge of engineering and science to demonstrate the understanding relevant to the previous work.	L3
BTETP709_2	Develop the hardware/software solution to the problem determined with concerns of societal , environment and industrial needs.	L5
BTETP709_3	Apply the knowledge and skills to do analyze and interpretations of the data for the testing and control the designated electrical system.	L3
BTETP709_4	Solve complex engineering activities, write effective report and documentation and make effective presentation.	L4
BTETP709_5	Identify in independent and lifelong learning in the broadcast context of technological change.	L1

Course Outcomes(COs): Upon successful completion of this course, the student will be able to:		Blooms Level
BTETPE801D_1	Develop the PLC program for various timing and sequencing operations.	L2
BTETPE801D_2	Analyze the requirements for a given industrial process and select the most appropriate automation architecture and technologies	L3
BTETPE801D_3	Specify the strategies for utilizing robots in industrial environment	L2
BTETPE801D_4	Identify the necessity of using Supervisory Control and Data Acquisition (SCADA) for Complex projects.	L3
BTETPE801D_5	Design the automation systems for various industrial processes	L3

Course Outcomes(COs): Upon successful completion of this course, the student will be able to:		Blooms Level
BTETPE802A_1	Understand the concept of IoT and M2M	L2
BTETPE802A_2	Understand various devices, sensors and actuators.	L2
BTETPE802A_3	Design of Various wireless sensor networks for Internet of Things.	L3
BTETPE802A_4	Analyze Various protocol for Internet of Things.	L4
BTETPE802A_5	Analyze architecture and application of Internet of Things in real time scenario.	L4

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Course Outcomes(COs): Upon successful completion of this course, the student will be able to:		Blooms Level
BTMEP803_1	Develop the hardware/software solution to the problem determined with concerns of societal, environment and industrial needs.	L3
BTMEP803_2	Apply the knowledge and skills to do analyze and interpretations of the data for the testing and control the designated Hardware /Software system.	L5
BTMEP803_3	Solve complex engineering activities, write effective report and documentation and make effective presentation.	L3
BTMEP803_4	Identify in independent and lifelong learning in the broadcast context of technological change.	L4

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Faculty of Engineering

Department of Mechanical Engineering

Course Outcomes

Second Year B. Tech.

Cos	Engineering Mathematics-III (BTBS301)
BTBS301_1	Solve higher order linear differential equation using appropriate techniques for modeling and analyzing electrical circuits.
BTBS301_2	Solve problems related to Fourier transform, Laplace transform and applications to Communication systems and Signal processing.
BTBS301_3	Obtain Interpolating polynomials, numerically differentiate and integrate functions, numerical solutions of differential equations using single step and multi-step iterative methods used in modern scientific computing.
BTBS301_4	Perform vector differentiation and integration, analyze the vector fields and apply to Electromagnetic fields.
BTBS301_5	Analyze conformal mappings, transformations and perform contour integration of complex functions in the study of electrostatics and signal processing.

Cos	Fluid Mechanics (BTMC302)
BTMC302_1	Explain basic properties of fluid, fluid statics, kinematics and dynamics.
BTMC302_2	Identify various types of flow, flow patterns and their significance.
BTMC302_3	Explain concepts of flow through pipes, boundary layer theory, forces on immersed bodies and dimensionless parameters.
BTMC302_4	Derive various equations in fluid mechanics such as Euler's, Bernoulli's, Momentum, Continuity etc.
BTMC302_5	Solve the problems related to properties of fluid, fluid kinematics, fluid dynamics, laminar flow, pipe flow, dimensional analysis, boundary layer theory, and forces on immersed bodies.

Cos	Thermodynamics(BTMC303)
BTMC303_1	Define the terms like system, boundary, properties, equilibrium, work, heat, ideal gas, entropy etc. used in thermodynamics.
BTMC303_2	Studied different laws of thermodynamics and apply these to simple thermal systems to study energy balance .
BTMC303_3	Studied Entropy, application and disorder.
BTMC303_4	Studied various types of processes like isothermal, adiabatic, etc. considering system with ideal gas and represent them on p-v and T-s planes.
BTMC303_5	Represent phase diagram of pure substance (steam) on different thermodynamic planes like p-v, T-s, h-s, etc. Show various constant property lines on them

Vision of the Department

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M3: To create an environment for the students to excel in mechanical engineering field, engage in research and development activity and participate in professional activities.

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Faculty of Engineering

Department of Mechanical Engineering

Cos	Material Science and Metallurgy (BTMES304)
BTMES304_1	Study various crystal structures of materials
BTMES304_2	Understand mechanical properties of materials and calculations of same using appropriate equations
BTMES304_3	Evaluate phase diagrams of various materials
BTMES304_4	Suggest appropriate heat treatment process for a given application
BTMES304_5	Prepare samples of different materials for metallography
BTMES304_6	Recommend appropriate NDT technique for a given application

Cos	Machine Drawing and CAD Lab (BTMCL305)
BTMCL305_1	Interpret the object with the help of given sectional and orthographic views.
BTMCL305_2	Construct the curve of intersection of two solids
BTMCL305_3	Draw machine element using keys, cotter, knuckle, bolted and welded joint
BTMCL305_4	Assemble details of any given part. i. e. valve, pump, machine tool part etc.
BTMCL305_5	Represent tolerances and level of surface finish on production drawings
BTMCL305_6	Understand various creating and editing commands in Auto Cad

Cos	Mechanical Engineering Lab - I (BTMCL306)
BTMCL306_1	Test the material through different mechanical or non-destructive testing
BTMCL306_2	Observe microstructure of different materials after heat treatment processes
BTMCL306_3	Apply fluid mechanics principles to analyze flow behavior and verify theoretical concepts.
BTMCL306_4	Measure and evaluate pressure variations in different flow systems.

Cos	IT – 1 Evaluation (BTES209P)
BTES209P_1	To make the students aware of industrial culture and organizational setup
BTES209P_2	To create awareness about technical report writing among the studentc.

Semester IV (Second Year)

Cos	Manufacturing Processes-I (BTMC401)
BTMC401_1	Identify castings processes, working principles and applications and list various defects in metal casting
BTMC401_2	Understand the various metal forming processes, working principles and applications
BTMC401_3	Classify the basic joining processes and demonstrate principles of welding, brazing and soldering.
BTMC401_4	Study center lathe and its operations including plain, taper turning, work holding devices and cutting tool.
BTMC401_5	Understand milling machines and operations, cutters and indexing for gear cutting.

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Faculty of Engineering

Department of Mechanical Engineering

BTMC401_6	Study shaping, planning and drilling, their types and related tooling's
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Cos	Theory of Machines- I (BTMC402)
BTMC402_1	Define basic terminology of kinematics of mechanisms
BTMC402_2	Classify planar mechanisms and calculate its degree of freedom
BTMC402_3	Perform kinematic analysis of a given mechanism using ICR and RV methods
BTMC402_4	Introduction of different types of lubrication system.
BTMC402_5	Perform kinematic analysis of slider crank mechanism using Klein's construction and analytical approach
BTMC402_6	Perform balancing of unbalance forces in rotating masses, different types of single/multi cylinder reciprocating engines in different positions.

Cos	Basic Human Rights (BTHM403)
BTHM403_1	Understand the history of human rights.
BTHM403_2	Learn to respect others caste, religion, region and culture.
BTHM403_3	Be aware of their rights as Indian citizen
BTHM403_4	Understand the importance of groups and communities in the society.
BTHM403_5	Realize the philosophical and cultural basis and historical perspectives of human rights
BTHM403_6	Make them aware of their responsibilities towards the nation

Cos	Strength of Materials (BTMES404)
BTMES404_1	State the basic definitions of fundamental terms such as axial load, eccentric load, stress, strain, E , μ , principle stresses, etc.
BTMES404_2	Analyze the stresses and strain energy in different load cases
BTMES404_3	Design the columns based on deflection
BTMES404_4	Design a beam based on bending and shafts based on torsion
BTMES404_5	Analyze given beam for calculations of SF and BM
BTMES404_6	Calculate slope and deflection at a point on cantilever /simply supported beam using double integration, Macaulay's , Area-moment and superposition methods

Cos	Numerical Methods in Mechanical Engineering (BTMPE405A)
BTMPE405A_1	Describe the concept of error
BTMPE405A_2	Illustrate the concept of various Numerical Techniques
BTMPE405A_3	Evaluate the given Engineering problem using the suitable Numerical Technique
BTMPE405A_4	Develop the computer programming based on the Numerical Techniques

Cos	Mechanical Engineering Lab II (BTMCL406)
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Department of Mechanical Engineering

BTMCL406_1	Perform plain turning, step turning, knurling, eccentric turning, chamfering and facing operations on lathe.
BTMCL406_2	Perform joining of two plate using TIG/MIG welding.
BTMCL406_3	To study speed and torque analysis of epicyclic gear train
BTMCL406_4	To study kinematic analysis synchromesh, machine tool gear box, differential gear box
BTMCL406_5	To study Tension test on ferrous and non-ferrous alloys
BTMCL406_6	To study Shear test on mild steel and aluminum

Third Year B. Tech.

Semester - V

Cos	Heat Transfer (BTMC 501)
BTMC 501_1	Explain the laws of heat transfer and deduce the general heat conduction equation and to explain it for 1-D steady state heat transfer in regular shape bodies
BTMC 501_2	Describe the critical radius of insulation, overall heat transfer coefficient, thermal conductivity and lumped heat transfer
BTMC 501_3	Interpret the extended surfaces
BTMC 501_4	Illustrate the boundary layer concept, dimensional analysis, forced and free convection under different conditions
BTMC 501_5	Describe the Boiling heat transfer, Evaluate the heat exchanger and examine the LMTD and NTU methods applied to engineering problems
BTMC 501_6	Explain the thermal radiation black body, emissivity and reflectivity and evaluation of view factor and radiation shields

Cos	Machine Design - I (BTMC 502)
BTMC 502_1	Formulate the problem by identifying customer need and convert into design Specification
BTMC 502_2	Understand component behavior subjected to loads and identify failure criteria
BTMC 502_3	Analyze the stresses and strain induced in the component
BTMC 502_4	Design of machine component using theories of failures
BTMC 502_5	Design of component for finite life and infinite life when subjected to fluctuating load
BTMC 502_6	Design of components like shaft, key, coupling, screw and spring

Cos	Theory of Machines - II (BTMC 503)
BTMC 503_1	Identify and select type of belt and rope drive for a particular application
BTMC 503_2	Evaluate gear tooth geometry and select appropriate gears, gear trains
BTMC 503_3	Define governor and select/suggest an appropriate governor
BTMC 503_4	Characterize flywheels as per engine requirement
BTMC 503_5	Understand gyroscopic effects in ships, aero planes, and road vehicles.

Vision of the Department

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Faculty of Engineering

Department of Mechanical Engineering

BTMC 503_6	Understand free and forced vibrations of single degree freedom systems
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Cos	Automobile Engineering (BTAPE504D)
BTAPE504D_1	Identify the different parts of the automobile
BTAPE504D_2	Explain the working of various parts like engine, transmission, clutch, brakes etc.,
BTAPE504D_3	Demonstrate various types of drive systems; front and rear wheels, two and four wheel
BTAPE504D_4	Apply vehicle troubleshooting and maintenance procedures.
BTAPE504D_5	Analyze the environmental implications of automobile emissions. And suggest suitable regulatory modifications.

Cos	Renewable Energy Sources (BTMOE505B)
BTMOE505B_1	Explain the difference between renewable and non-renewable energy
BTMOE505B_2	Describe working of solar collectors
BTMOE505B_3	Explain various applications of solar energy
BTMOE505B_4	Describe working of other renewable energies such as wind, biomass , nuclear

Cos	Applied Thermodynamics (BTMC506)
BTMC506_1	Define the terms like calorific value of fuel, stoichiometric air-fuel ratio, excess air, equivalent evaporation, boiler efficiency, etc. Calculate minimum air required for combustion of fuel.
BTMC506_2	Studied and Analyze gas power cycles and vapour power cycles and derive expressions for the performance parameters like thermal efficiency.
BTMC506_3	Classify various types of boilers, nozzle, steam turbine and condenser used in steam power plant.
BTMC506_4	Classify various types condenser, nozzle and derived equations for its efficiency
BTMC506_5	Draw P-v diagram for single-stage reciprocating air compressor, with and without clearance volume, and evaluate its performance. Differentiate between reciprocating and rotary air compressors.

Cos	Mechanical Engineering Lab – III (BTMCL 507)
BTMCL 507_1	Understand the various heat transfer mode of heat transfer and its application and verify
BTMCL 507_2	Learn the experimental methodology
BTMCL 507_3	To draw cam profile for various types of follower motions
BTMCL 507_4	To generate gear tooth profile and to study the effects under cutting and rack shift using models
BTMCL 507_5	Apply design process to an open ended problem
BTMCL 507_6	Determine suitable material and size for structural component of machine/system

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Faculty of Engineering

Department of Mechanical Engineering

Cos	IT – 1 Evaluation (BTMI408)
BTMI408_1	To make the students aware of industrial culture and organizational setup
BTMI408_2	To create awareness about technical report writing among the studentc.

Semester - VI

Cos	Manufacturing Processes - II (BTMC 601)
BTMC 601_1	Understand the abrasive processes
BTMC 601_2	Calculate the cutting forces in orthogonal and oblique cutting
BTMC 601_3	Evaluate the machinability of materials
BTMC 601_4	Understand the process of powder metallurgy and its applications
BTMC 601_5	Explain the different precision machining processes
BTMC 601_6	Understanding plastic

Cos	Machine Design - II (BTMC 602)
BTMC 602_1	Define function of bearing and classify bearings.
BTMC 602_2	Understanding failure of bearing and their influence on its selection.
BTMC 602_3	Classify the friction clutches and brakes and decide the torque capacity and friction disk parameter.
BTMC 602_4	Select materials and configuration for machine element like gears.
BTMC 602_5	Design of elements like gears, belts for given power rating

Cos	IC Engines (BTMPE603A)
BTMPE603A_1	Understand various types of I.C. Engines and Cycles of operation.
BTMPE603A_2	Analyze the effect of various operating variables on engine performance
BTMPE603A_3	Identify fuel metering and fuel supply systems for different types of engines
BTMPE603A_4	Understand normal and abnormal combustion phenomena in SI and CI engines
BTMPE603A_5	Evaluate performance Analysis of IC Engine and Justify the suitability of IC Engine for different application
BTMPE603A_6	Understand the conventional and non-conventional fuels for IC engines and effects of emission formation of IC engines, its effects and the legislation standards

Cos	Product Life Cycle Management (BTMPE604B)
BTMPE604B_1	Outline the concept of PLM.
BTMPE604B_2	Illustrate the PDM system and its importance.
BTMPE604B_3	Illustrate the product design process.
BTMPE604B_4	Build the procedure for new product development.
BTMPE604B_5	Classify and compare various technology forecasting methods.
BTMPE604B_6	Outline the stages involved in PLM for a given product.

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Faculty of Engineering

Department of Mechanical Engineering

Cos	Energy Conservation and Management (BTMOE605C)
BTMOE605C_1	Understand energy problem and need of energy management
BTMOE605C_2	Carry out energy audit of simple units
BTMOE605C_3	Study various financial appraisal methods
BTMOE605C_4	Analyze cogeneration and waste heat recovery systems
BTMOE605C_5	Do simple calculations regarding thermal insulation and electrical energy conservation

Cos	Mechanical Engineering Lab – IV (BTMCL 606)
BTMCL 606_1	Identify and classify various types of chips produced during machining processes.
BTMCL 606_2	Investigate the relationship between cutting speed, tool material, and tool wear in oblique turning.
BTMCL 606_3	Develop skills in creating assembly drawings, including part lists and overall dimensions, as well as detailed drawings for individual components.
BTMCL 606_4	Develop the ability to compile a comprehensive design report that includes all necessary calculations for the machine design project.
BTMCL 606_5	Understand and analyze the functioning of components like carburetors, fuel injectors, and ignition systems in IC engines.
BTMCL 606_6	Perform engine tests (variable load, variable speed) and measure exhaust emissions to evaluate engine performance and energy balance.

Cos	B. Tech Seminar (BTMS607)
BTMS607_1	To expose and make students aware with latest research and research publications
BTMS607_2	To understand the research and research publication, references, citation
BTMS607_3	To enhance the presentation skill
BTMS607_4	To enhance the report writing
BTMS607_5	To make the student aware about research publication sites

Cos	Mini Project (BTAP608)
BTAP608_1	Visit nearby places to understand the problems of the community
BTAP608_2	Select one of the problems for the study, state the exact title of the project and define scope of the problem
BTAP608_3	Explain the motivation, objectives and scope of the project
BTAP608_4	Evaluate possible solutions of the problem
BTAP608_5	Design, produce, test and analyze the performance of product/system/process
BTAP608_6	Modify, improve the product/system/process

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Faculty of Engineering

Department of Mechanical Engineering

Final Year B. Tech.

Semester VII

Cos	Mechatronics (BTMC701)
BTMC701_1	Define sensor, transducer and understand the applications of different sensors and transducers
BTMC701_2	Explain the signal conditioning and data representation techniques
BTMC701_3	Design pneumatic and hydraulic circuits for a given application
BTMC701_4	Write a PLC program using Ladder logic for a given application
BTMC701_5	Understand applications of microprocessor and micro controller
BTMC701_6	Analyse PI, PD and PID controllers for a given application

Cos	Industrial Engineering and Management (BTHM702)
BTHM702_1	Impart fundamental knowledge and skill sets required in the Industrial Management and Engineering profession, which include the ability to apply basic knowledge of mathematics, probability and statistics, and the domain knowledge of Industrial Management and Engineering
BTHM702_2	Produce ability to adopt a system approach to design, develop, implement and innovate integrated systems that include people, materials, information, equipment and energy.
BTHM702_3	Understand the interactions between engineering, businesses, technological and environmental spheres in the modern society.
BTHM702_4	Understand their role as engineers and their impact to society at the national and global context.

Cos	Additive Manufacturing BTMPE703E
BTMPE703E_1	Understand the importance of Additive Manufacturing
BTMPE703E_2	Classify the different AM processes
BTMPE703E_3	Design for AM processes
BTMPE703E_4	Understand the applications of AM
BTMPE703E_5	Differentiate the post processing processes

Cos	Plant Maintenance (BTMOE704C)
BTMOE704C_1	Recognize and enlist probable failures in mechanical elements.
BTMOE704C_2	Dismantle, assemble and align mechanisms in sequential order for given assembly.
BTMOE704C_3	Compare maintenance practices like on-line, shut down, corrosion, productive and preventive maintenance.
BTMOE704C_4	Analyze economics of plants and list factors affecting the maintenance of a plant.

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Faculty of Engineering

Department of Mechanical Engineering

BTMOE704C_5	Correlate the linkages between different maintenance aspects and how they impact on overall maintenance effectiveness.
BTMOE704C_6	Analyze different maintenance techniques and select an appropriate technique for a particular plant.

Cos	Intellectual Property Rights (BTMOE705C)
BTMOE705C_1	State the basic fundamental terms such as copyrights, Patents, Trademarks etc.,
BTMOE705C_2	Interpret Laws of copy-rights, Patents, Trademarks and various IP registration Processes.
BTMOE705C_3	Exhibit the enhance capability of Final Year to do economic analysis of IP rights, technology and innovation related policy issues and firms commercial strategies
BTMOE705C_4	Create awareness at all levels (research and innovation) to develop patentable technologies.
BTMOE705C_5	Apply trade mark law, copy right law, patent law and also carry out intellectual property audits.
BTMOE705C_6	Manage and safeguard the intellectual property and protect it against unauthorized use.

Cos	Mechanical Engineering Lab –V (BTMCL706)
BTMCL706_1	Demonstrate the working principles and applications of various sensors and actuators used in mechatronics systems.
BTMCL706_2	Develop and implement control circuits using Pneumatic, Electro-Pneumatic, and Hydraulic trainer kits for automation applications.
BTMCL706_3	Illustrate the working principles and process parameters of different Additive Manufacturing techniques such as FDM, SLS, and LOM.
BTMCL706_4	Analyze STL file preparation, manipulation, and pre/post-processing techniques for effective Additive Manufacturing.

Cos	Mini Project (BTMP707)
BTMP707_1	Identify and formulate a mechanical engineering problem for the mini project, considering technical and practical aspects.
BTMP707_2	Conduct a literature review and gather relevant data to define the project scope and objectives
BTMP707_3	Develop a conceptual design or preliminary model for the mechanical system or process.
BTMP707_4	Implement the initial stages of the project, including prototyping or computational analysis.

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Faculty of Engineering

Department of Mechanical Engineering

BTMP707_5	Prepare and present a mid-term technical report and presentation effectively, demonstrating teamwork and technical communication.
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Cos	Industrial Training - III (BTMI609)
BTMI609_1	To make the students aware of industrial culture and organizational setup
BTMI609_2	To create awareness about technical report writing among the student

Semester VIII

Cos	Fundamentals of Automotive System (BTMEC801A)
BTMEC801A_1	Acquire fundamental knowledge of the various systems of an automobile
BTMEC801A_2	Understand the functions of each system and their design and layout.
BTMEC801A_3	Depict the various systems using simple schematics.
BTMEC801A_4	Analyze the interrelationships between different automotive systems
BTMEC801A_5	Apply concepts learned in core undergraduate courses to synthesize mathematical models of the various systems.

Cos	Non-Conventional Energy Resources (BTMEC801F)
BTMEC801F_1	Explain the difference between renewable and non-renewable energy
BTMEC801F_2	Describe various applications of solar energy
BTMEC801F_3	Explain various applications of tidal, nuclear
BTMEC801F_4	Describe working of other renewable energies such as wind, biomass

Cos	Project Stage-II (BTMEP803)
BTMEP803_1	Identify and define a real-world mechanical engineering problem, considering technical, economic, and societal aspects.
BTMEP803_2	Develop and implement a systematic project plan, including research, design, and execution stages
BTMEP803_3	Design, simulate, and prototype mechanical systems or processes using modern engineering tools and technologies
BTMEP803_4	Analyze experimental or computational results and validate them with theoretical principles
BTMEP803_5	Communicate project outcomes effectively through technical documentation, presentations, and teamwork.

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**Department of Electrical Engineering****COURSE OUTCOMES****Second Year (B-Tech)**

Course Outcomes (COs): Upon successful completion of this course, the student will be able to:		Blooms Level
BTEEC302_1	Analyse the equivalent circuit of single-phase transformer to evaluate the losses, voltage regulation, and efficiency; and learn fundamentals of 1-phase and 3-phase auto-transformers	L3
BTEEC302_2	Gain knowledge of construction and working of 3-phase transformer and understand various interconnections for phase conversion	L2
BTEEC302_3	Gain knowledge of fundamental laws and principles of magnetic systems and apply them for electromechanical energy conversion	L2
BTEEC302_4	Analyse Armature reaction in DC Generators, Commutation, and different characteristics including efficiency and voltage regulation	L3
BTEEC302_5	Describe Construction and working of DC Motors, analyse types of DC motors, their characteristics, speed control and starting methods.	L3
BTEEC302_6	Differentiate different special purpose motors for their construction, working and applications	L3

Course Outcomes (COs): Upon successful completion of this course, the student will be able to:		Blooms Level
BTEEC303_1	Illustrate various concepts of measuring instruments (Analog/Digital), their classification, construction, working and range extension technique.	L3
BTEEC303_2	Derive the equations of different methods for measurement of resistance, inductance and capacitance.	L3
BTEEC303_3	Describe various analysers, its types & modern techniques in measurement.	L3
BTEEC303_4	Explain construction and operation of different transducers.	L3

Course Outcomes (COs): Upon successful completion of this course, the student will be able to:		Blooms Level
BTES305_1	Illustrate properties and application of different conducting materials in electrical engineering field and crystal structure.	L3
BTES305_2	Describe properties, phenomenon of polarization mechanism and applications of dielectric materials.	L3
BTES305_3	Discuss properties and application of semiconductor materials in electrical engineering field.	L3
BTES305_4	Interpret properties and application of magnetic materials in electrical engineering field.	L3
BTES305_5	Explain special purpose materials and non-destructive testing of special purpose materials.	L3

Vision of the Department

To emerge as a center of excellence in Electrical Engineering education producing knowledgeable, employable, and ethical engineering graduates to serve industry/society

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We, at Department of Electrical Engineering, are committed to achieve our vision by-

M1: Preparing technically and professionally competent engineers by imparting quality education through effective teaching learning methodologies.

M2: Developing professional skills and right attitude among students that will help them to succeed and progress in their personal and professional career.

M3: Inculcating moral and ethical values in students with concern to society and environment.

**Department of Electrical Engineering**

Course Outcomes (COs): Upon successful completion of this course, the student will be able to:		Blooms Level
BTEEL307_1	Demonstrate mechanism of various measuring instruments.	L3
BTEEL307_2	Conduct different measuring methods to measure various electrical parameters.	L3
BTEEL307_3	Select proper instrument for measurement of electrical parameters.	L2
BTEEL307_4	Respond Effectively in the form of oral and writing journal.	L2
BTEEL307_5	Examine the observations and determine the result of experiment.	L2

Course Outcomes (COs): Upon successful completion of this course, the student will be able to:		Blooms Level
BTEEC401_1	Discuss circuit elements, types of sources and classification of circuit elements. Also, able to apply the source and star-delta transformation on given circuits.	L3
BTEEC401_2	Apply network theorem to solve electric circuit and determine circuit parameters and able to use the concept of graph theory to solve electric circuit.	L3
BTEEC401_3	Analyze transient response of given ac circuit with initial and final conditions.	L3
BTEEC401_4	Apply Laplace transform analysis to solve various functions, electric circuit and differential equations. Also able to calculate and derive two port network parameters.	L3
BTEEC401_5	Derive and analyze resonance in ac circuit. Explain concept of filter and its type.	L3

Course Outcomes (COs): Upon successful completion of this course, the student will be able to:		Blooms Level
BTEEC403_1	Analyze principle of operation and constructional features of A.C. Machines	L3
BTEEC403_2	Gain knowledge ac machine windings	L2
BTEEC403_3	Describe Synchronous Machines Characteristics.	L3
BTEEC403_4	Analyze the operation and working principle of 3- phase Induction Motor	L3
BTEEC403_5	Describe Construction and working of Fractional Kilowatt Motors	L3
BTEEC403_6	Gain knowledge Special Machines	L2

Course Outcomes (COs): Upon successful completion of this course, the student will be able to:		Blooms Level
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Faculty of Engineering

Department of Electrical Engineering

BTEEPE405C_1	Explain the concepts of renewable energy sources and its applications.	L2
BTEEPE405C_2	Discuss the construction, types and application of fuel cells.	L2
BTEEPE405C_3	Describe terminologies of wind and solar energy power plants, its types and applications.	L2
BTEEPE405C_4	Explain process of biogas generation and its types and application.	L2
BTEEPE405C_5	Interpret the need of energy conversion and the various methods of energy storage.	L2

Course Outcomes (COs):		Blooms Level
Upon successful completion of this course, the student will be able to:		
BTEEL406_1	Apply conceptual knowledge of network theorems to solve different electrical circuits.	L3
BTEEL406_2	Perform experiment to solve given AC/DC circuit by different network theorems and different concepts.	L3
BTEEL406_3	Use modern tools to simulate DC/AC analysis and transient analysis for electric circuits.	L3
BTEEL406_4	Communicate effectively about laboratory work in both orally and writing.	L3
BTEEL406_5	Work effectively in team to perform and findings the results.	L3

Third Year (B-Tech)

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**Department of Electrical Engineering**

Course Outcomes (COs): Upon successful completion of this course, the student will be able to:		Blooms Level
BTEEC503_1	Introduction basics of Power Electronics Devices,	L2
BTEEC503_2	Ability to express characteristics of SCR ,BJT ,MOSFET ,IGBT	L3
BTEEC503_3	Design of Power Electronic Converters in Power Control Application	L4
BTEEC503_4	Ability to Design Inverter circuit and chopper circuit	L4
BTEEC503_5	Ability to Design AC Voltage Controller and Cycloconverter	L4

Course Outcomes (COs): Upon successful completion of this course, the student will be able to:		Blooms Level
BTEEOE505B_1	Explain primary and secondary electrical hazard and protective measures for safety.	L3
BTEEOE505B_2	Discuss necessity of electrical grounding and different bonding mechanism.	L3
BTEEOE505B_3	Describe Electrical safety programmer structure and step wise procedures.	L3
BTEEOE505B_4	Discuss step and procedures to be followed during maintenance of electrical equipment's.	L3
BTEEOE505B_5	Differentiate various codes and standards for ensuring electric safety to prevent from hazards.	L3

Course Outcomes (COs): Upon successful completion of this course, the student will be able to:		Blooms Level
BTEEL509_1	Understand the operating principles and characteristics of various power electronic converters.	L2
BTEEL509_2	Analyze and choose the appropriate converters for various applications	L2
BTEEL509_3	Use power electronic simulation packages& hardware to develop the power converters.	L2
BTEEL509_4	Perform individually or in a team to solve open ended problems in electrical engineering and communicate effectively to represent.	L2

Course Outcomes (COs): Upon successful completion of this course, the student will be able to:		Blooms Level
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**Department of Electrical Engineering**

BTEEC602_1	Analyze principle of design of machines.	L3
BTEEC602_2	Gain knowledge of Design of Simple Electrical Apparatus & AC and DC Windings	L3
BTEEC602_3	Gain knowledge of Design of Stator and rotor of Induction Motor	L3
BTEEC602_4	Analyze the Heating and Ventilation of Electrical Machines	L3
BTEEC602_5	Describe Design of Transformer	L4

Course Outcomes (COs): Upon successful completion of this course, the student will be able to:		Blooms Level
BTEEC603_1	Classify control systems and represent in various models	L2
BTEEC603_2	Apply standard test signals to a system to determine their characteristics	L3
BTEEC603_3	Make use of stability concepts to obtain the desired characteristics	L3
BTEEC603_4	Determine the effect of PID controller on system performance	L3
BTEEC603_5	Examine the system behavior using state variable techniques	L4

Course Outcomes (COs): Upon successful completion of this course, the student will be able to:		Blooms Level
BTEEPE604B_1	Describe Smart electric power grids, including definition, design criteria, and technology.	L3
BTEEPE604B_2	Explain smart grid architecture and necessary automation requirement for operation.	L3
BTEEPE604B_3	Discuss importance of distributed generation technologies and its economic aspects in micro grids.	L3
BTEEPE604B_4	Classify different communication technologies required in smart grid operation.	L4
BTEEPE604B_5	Select and explain different control and security mechanism implanted to control flow of electric power in smart grid.	L4

Course Outcomes (COs): Upon successful completion of this course, the student will be able to:	Blooms Level
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**Department of Electrical Engineering**

BTEEOE605B_1	Explain the economics involved in Power Plant and explain the functions, control and excitation systems of conventional energy sources.	L3
BTEEOE605B_2	Discuss various components of thermal and hydro power plant and the factors influencing the site selection for the plant.	L3
BTEEOE605B_3	Describe the working, classification, types and applications of nuclear, diesel and gas power plant.	L3
BTEEOE605B_4	Explain the components, principles and working of renewable power plants.	L3
BTEEOE605B_5	Illustrate the various concepts of combined operation of power plant.	L3

Final Year (B-Tech)

Course Outcomes (COs): Upon successful completion of this course, the student will be able to:		Blooms Level
BTEEC701_1	Analyze the concept of electric field stresses in high voltage engineering.	L3
BTEEC701_2	Realize the breakdown process in solid, liquid, and gaseous medium.	L3
BTEEC701_3	Illustrate breakdown in dielectric Materials.	L3
BTEEC701_4	Discuss overvoltage due to lightning phenomenon in high voltage engineering	L3
BTEEC701_5	Illustrate methods for generation and measurement of high voltages and currents (both ac and dc).	L3
BTEEC701_6	Explain the phenomenon of over-voltage and choose appropriate insulation coordination levels based on IS & IEC Standards.	L3

Course Outcomes (COs): Upon successful completion of this course, the student will be able to:		Blooms Level
BTEEC702_1	Analyze different methods to control reactive power.	L2
BTEEC702_2	Gain knowledge to check Stability of the synchronous generator ,and improvement in stability	L3
BTEEC702_3	Describe Excitation system types and control	L4
BTEEC702_4	Gain knowledge of importance of frequency control	L4
BTEEC702_5	Understand unit commitment problem and importance of economic load dispatch.	L4

Course Outcomes (COs): Upon successful completion of this course, the student will be able to:		Blooms Level
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Vision of the Department

To emerge as a center of excellence in Electrical Engineering education producing knowledgeable, employable, and ethical engineering graduates to serve industry/society

Mission of the Department

We, at Department of Electrical Engineering, are committed to achieve our vision by-
M1: Preparing technically and professionally competent engineers by imparting quality education through effective teaching learning methodologies.
M2: Developing professional skills and right attitude among students that will help them to succeed and progress in their personal and professional career.
M3: Inculcating moral and ethical values in students with concern to society and environment.

**Department of Electrical Engineering**

BTEEPE703A_1	Illustrate various concepts of energy sources and international agreements on climate change.	L3
BTEEPE703A_2	Describe use of different energy inputs in the industry and their energy efficient design.	L3
BTEEPE703A_3	Explain different forms of energy used in non – industrial sector.	L3
BTEEPE703A_4	Describe the concept of energy audit, its principle and measurement.	L3
BTEEPE703A_5	Explain the energy conservation in different sector and its numerical interpretation.	L3

Course Outcomes (COs): Upon successful completion of this course, the student will be able to:		Blooms Level
BTEEOE705B_1	Explain beneficial aspects of electric vehicle and vehicle mechanics of conventional vehicles.	L3
BTEEOE705B_2	Select suitable drive train and control mechanism for Electric and Hybrid Vehicles.	L3
BTEEOE705B_3	Choose appropriate propulsion system for Electric and Hybrid Electric Vehicles.	L3
BTEEOE705B_4	Describe suitable energy storage and its hybridization system for Electric and Hybrid Electric Vehicles.	L3
BTEEOE705B_5	Discuss determination of sizing of motor, power electronics and storage technology for Electric and Hybrid vehicle.	L3

Course Outcomes (COs): Upon successful completion of this course, the student will be able to:		Blooms Level
BTEEL707_1	Realize the principle of High Voltage Application in a practical manner.	L3
BTEEL707_2	Perform the breakdown test in solid, liquid, and gaseous materials.	L3
BTEEL707_3	Conduct test on generation and measurement of High Voltages and Currents (both ac and dc).	L3
BTEEL707_4	Communicate effectively in the form of oral and writing journal.	L3
BTEEL707_5	Practice safety precautions while performing experiments in Laboratory.	L3

Course Outcomes (COs): Upon successful completion of this course, the student will be able to:		Blooms Level
BTEEPE801_1	Attain a comprehensive grasp of course material, showcasing proficiency through practical applications and assessments.	L3
BTEEPE801_2	Cultivate critical thinking abilities by analyzing and synthesizing information, enabling adept problem-solving within the subject.	L3
BTEEPE801_3	Develop clear and concise communication skills, articulating complex ideas related to the course with precision.	L3
BTEEPE801_4	Foster self-directed learning habits by mastering time management and autonomously navigating through course material.	L4

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Yashoda Shikshan Prsarak Mandal's

Yashoda Technical Campus

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Faculty of Engineering

Department of Electrical Engineering

BTEEPE801_5	Apply acquired knowledge to real-world scenarios, demonstrating the practical relevance of learned concepts within the field of study.	L4
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