

## Course Outcomes

S. No.	Course Code	Course Title	Course Objective	Expected Outcome
1	BTBSC 101	Engineering Mathematics-I	<ul style="list-style-type: none"> <li>• To familiarize the prospective engineers with techniques in calculus, multivariate analysis and linear algebra.</li> <li>• To equip the students with standard concepts and tools at an intermediate to advanced level</li> <li>• To understand Fourier series representation of Periodic signals and to introduce with Fourier Series.</li> </ul>	<p>CO1: Understand the calculation and Applications of definite integrals.</p> <p>CO2: Solve problems related to Sequences and Series.</p> <p>CO3: Interpret the concept of a series as the sum of a sequence and able to solve problems related to Fourier series.</p> <p>CO4: Interpret the concept of a series as the sum of a sequence and use the sequence of partial sums to determine divergence of a series.</p> <p>CO5: Understand the calculation and Applications of Multivariable integrals.</p>
2	BTBSC 102	Engineering Physics	<ul style="list-style-type: none"> <li>• To understand the concepts of interference, Diffraction and Polarization.</li> <li>• To know about wave particle duality.</li> <li>• To know applications of Optical fibre.</li> <li>• To know applications of Lasers in Science, engineering and medicine.</li> <li>• To know classification of Solid.</li> </ul>	<p>CO1: Enhance the basic skills required to understand, develop, and design various engineering applications involving Wave Optics.</p> <p>CO2: Understand Quantum Mechanics and apply them to diverse engineering problems.</p> <p>CO3: Analyze the nature of light propagation in guided medium for engineering applications and study in Coherence and Optical Fibers.</p> <p>CO4: Describe different Laser problems.</p> <p>CO5: Describe Material Science &amp; Semiconductor Physics.</p>
3	BTHSMC 103	Communication Skills	<ul style="list-style-type: none"> <li>• To improve communication skills with Basic English.</li> <li>• To know different types of communication.</li> <li>• To develop basic skills needed for writing short stories and poems.</li> </ul>	<p>CO1: Understand Communication and Types of Communication.</p> <p>CO2: Know Grammar of Passive Voice, Reported Speech.</p> <p>CO3: Understand different ways of writing Job Application and Curriculum-Vitae.</p> <p>CO4: Describe different Short Stories for effective Learning.</p> <p>CO5: Describe different poems for improving communication skills.</p>
4	BTESC 104	Programming for Problem Solving	<ul style="list-style-type: none"> <li>• To learn the fundamentals of computers.</li> <li>• To understand the various steps in program development.</li> <li>• To learn the syntax and semantics of C programming language.</li> <li>• To learn the usage of structured programming approach in solving problems.</li> </ul>	<p>CO1: Know and understand the conventions of Fundamentals of Computer.</p> <p>CO2: Represent algorithms through flowchart and pseudo code.</p> <p>CO3: Learn Number system and apply these skills in developing new products.</p> <p>CO4: Understand and learn C Programming.</p> <p>CO5: Comprehend the Development of C programs using- Arrays, functions.</p>

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5	BTESC 105A	Basic Electrical Engineering	<ul style="list-style-type: none"> <li>• To inculcate the essentials of Civil Engineering field to the students of all branches of Engineering.</li> <li>• To provide students the significance of the Civil Engineering Profession in satisfying societal needs.</li> </ul>	CO1: Apply basic skills for designing various instruments for engineering applications. CO2: Determine error in laboratory measurements and techniques used to minimize such error. CO3: Gain knowledge regarding the various laws and principles associated with electrical systems. CO4: Understand electrical machines and apply them for practical problems. CO5: Understand the concepts in the field of electrical engineering, projects and research.
6	BTESC 105B	Basic Civil Engineering	<ul style="list-style-type: none"> <li>• To inculcate the essentials of Civil Engineering field to the students of all branches of Engineering.</li> <li>• To provide students the significance of the Civil Engineering Profession in satisfying societal needs.</li> </ul>	CO1: Illustrate the fundamental aspects of Civil Engineering. CO2: Understand the scope of civil engineering. CO3: Explain the concepts of surveying for making horizontal and vertical measurements. CO4: Describe plan and set out of a building, also illustrate the uses of various building materials and explains the method of construction of different components of a building. CO5: Understand the modes of Traffic and Road Safety and Road Safety Measures
7	BTBSC 106	Engineering Physics Lab	<ul style="list-style-type: none"> <li>• To understand the concepts of interference.</li> <li>• To know about wavelength of light.</li> <li>• To know about depletion layer and band gap of semiconductor.</li> <li>• To know dispersion of light through prism.</li> <li>• To know principle of Hall Effect.</li> </ul>	CO1: Understand the usage of common Ammeter, voltmeter and Multimeter. CO2: Formulate and solve complex AC, DC circuits. CO3: Understand the usage of common electrical measuring instruments. CO4: Identify the type of electrical machine used for that particular application. CO5: Understand the usage of optical instruments.
8	BTHSMC 107	Language Lab	<ul style="list-style-type: none"> <li>• To understand concepts of basic English language fundamentals.</li> <li>• To understand the communication skills.</li> <li>• To develop Dialogue Writing and Listening comprehension.</li> </ul>	CO1: Understand the Phonetic Symbols and Transcriptions. CO2: Understand the skills required in Extempore. CO3: Improve their communication skills for Group Discussion. CO4: Improve their technical communication skills. CO5: Understand Dialogue Writing and Listening skills.

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9	BTESC 108	Computer Programming Lab	<ul style="list-style-type: none"> <li>• To understand the various steps in program development.</li> <li>• To learn the syntax and semantics of C programming language.</li> <li>• To learn the usage of structured programming approach in solving problems.</li> </ul>	CO1: Learn about the C Library, Preprocessor directive, Input-output statement. CO2: Learn data type, variables, and conditional statement. CO3: Learn about array and string operations. CO4: Understand File handling operations. CO5: Learn programs related to C Programming and apply them to solve real world problems.
10	BTESC109A	Basic Electrical Engineering Lab	<ul style="list-style-type: none"> <li>• To Introduce The Various Activities Regarding Measurement And Leveling</li> <li>• To Water Supply Procedure And Various Discharge And Pressure Measuring Apparatuses</li> </ul>	CO1. Adapt knowledge regarding the various laws and principles associated with electrical systems. CO2: Adapt knowledge regarding electrical machines and apply them for practical problems. CO3: Understand various types' Electrical Equipments. CO4: Understanding digital measuring equipments.
11	BTESC109B	Basic Civil Engineering Lab	<ul style="list-style-type: none"> <li>• To Introduce The Various Activities Regarding Measurement And Leveling</li> <li>• To Water Supply Procedure And Various Discharge And Pressure Measuring Apparatuses</li> </ul>	CO1: Conduct survey and collect field data. CO2: Review field notes from survey data. CO3: Interpret survey data and compute areas and volumes. CO4: Describe Total station and measurement CO5: Describe various water fittings and find out the various fluids properties
12	BTESC 110	Computer Aided Engineering Graphics	<ul style="list-style-type: none"> <li>• To Increase ability to communicate with people</li> <li>• To Learn to sketch and take object dimensions.</li> <li>• To Learn to take data and transform it into graphic drawings.</li> </ul>	CO1: Know and understand the conventions and the method of engineering drawing. CO2: Interpret engineering drawings using fundamentals of different views to construct basic and intermediate geometry. CO3: Know the Theory of sectioning and Section of Solids. CO4: Comprehend the theory of projection. CO5: Improve their drawing skill in the form of Computer Graphics.
13	BTSODECA111	Discipline	<ul style="list-style-type: none"> <li>• To allowing students to explore strengths and talents outside of academics.</li> <li>• To helping students develop stronger time-management and organizational skills.</li> <li>• To giving students the opportunity to build friendships and participate in group activities outside of the tight circle of the regular classroom.</li> <li>• To helping to build confidence and self-esteem.</li> </ul>	CO1: Develop their self-confidence, leadership qualities, and their responsibilities towards the community. CO2: Have an impact on academic development, personal development, and civic responsibility CO3: Understand the value of Social Work. CO4: Understand the Significance of Discipline in student's Life CO5: Contribute towards in social up-gradation by social organization like, Art of Living, Yoga etc., Blood donation, Awareness programs, personality development programs.

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14	BTBSC 201	Engineering Mathematics-II	<ul style="list-style-type: none"> <li>• To provide detailed of matrices which is applied for solving system of linear equations and useful in various fields of technology.</li> <li>• To understand the course is an introduction to ordinary differential equations.</li> <li>• To understand the collection of methods and techniques used to find solutions to several types of differential equations, including first order scalar equations.</li> </ul>	CO1: Understand the matrices, Rank of a matrix, rank-nullity theorem; System of linear equations. CO2: Identify, analyze and subsequently solve physical situations whose behavior can be described by First order and First degree ordinary differential. CO3: Determine solutions to second order linear differential equations with variable coefficients. CO4: Solve Engineering problems using different methods and techniques. CO5: Evaluate the first order and Second order partial differential equations
15	BTBSC 202	Engineering Chemistry	<ul style="list-style-type: none"> <li>• To acquire the knowledge about impurities in water, their determination and purification.</li> <li>• To learn about different types of fuel and lubricant and their applications.</li> <li>• To gain the basic knowledge, applications and control methods of corrosion.</li> <li>• To get the knowledge of preparation and significance of explosives, cement, refractories and glass.</li> <li>• To get the knowledge of organic reaction mechanism and their uses with different types of drugs</li> </ul>	CO1: gain knowledge about impurities in water, their determination and purification. CO2: understand organic fuels and various emerging new areas of organic chemistry. CO3: learn about Corrosion and its control. CO4: Get knowledge about the chemistry of some Engineering Materials like Portland Cement. CO5: understand and study Organic reaction mechanisms.
16	BTHSMC 203	Human Values	<ul style="list-style-type: none"> <li>• To Know the basic guidelines, content and Process for Value Education</li> <li>• To develop understanding different Harmony concept.</li> <li>• To understand professional ethics and natural acceptance of human values.</li> </ul>	CO1: Understand and analyze Basic Guidelines, Content and Process for Value Education. CO2: Understand Harmony in the Human Being - Harmony in Myself. CO3: Understand Harmony in the Family and Society- Harmony in Human-Human Relationship. CO4: Understand Harmony in the Nature and Existence – Whole existence as Coexistence. CO5: Understand of Harmony on Professional Ethics. Natural acceptance of human values.

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17	BTESC 204	Basic Mechanical Engineering	<ul style="list-style-type: none"> <li>• To Increase ability to understand machine working</li> <li>• To Learn to understand fundamentals of mechanical systems</li> <li>• To Learn to make different mechanical aspects of engineering</li> </ul>	CO1: Know and understand the Fundamentals of thermal engineering, mechanical machine design, industrial engineering and manufacturing technology. CO2: Understand the Refrigeration and Air Conditioning. CO3: Understand the Applications and working of Reciprocating and Centrifugal pumps. CO4: Know the Transmission of Power through Belt and Rope Drives, Gears. CO5: Understand of Primary Manufacturing Processes.
18	BTESC205A	Basic Civil Engineering	<ul style="list-style-type: none"> <li>• To Understand the basic concept of Electrical engineering instruments for engineering applications.</li> <li>• To Understand the basic electrical engineering parameters and their importance.</li> <li>• To Understand the concept of various laws and principles associated with electrical systems.</li> <li>• To Develop the knowledge to apply concepts in the field of electrical engineering, projects and research.</li> </ul>	CO1: Illustrate the fundamental aspects of Civil Engineering. CO2: Understand the scope of civil engineering. CO3: Explain the concepts of surveying for making horizontal and vertical measurements. CO4: Describe plan and set out of a building, also illustrate the uses of various building materials and explains the method of construction of different components of a building. CO5: Understand the modes of Traffic and Road Safety and Road Safety Measures
19	BTESC205B	Basic Electrical Engineering	<ul style="list-style-type: none"> <li>• To Understand the basic concept of Electrical engineering instruments for engineering applications.</li> <li>• To Understand the basic electrical engineering parameters and their importance.</li> <li>• To Understand the concept of various laws and principles associated with electrical systems.</li> <li>• To Develop the knowledge to apply concepts in the field of electrical engineering, projects and research.</li> </ul>	CO1: Apply basic skills for designing various instruments for engineering applications. CO2: Determine error in laboratory measurements and techniques used to minimize such error. CO3: Gain knowledge regarding the various laws and principles associated with electrical systems. CO4: Understand electrical machines and apply them for practical problems. CO5: Understand the concepts in the field of electrical engineering, projects and research.
20	BTHSMC 206	Advanced English	<ul style="list-style-type: none"> <li>• To Develop basic communication concept for social environment.</li> <li>• To Improve conversation skills to increase confidence and proficiency.</li> <li>• To understand the concept of English in 'real life' situations.</li> <li>• To apply grammar knowledge for growing according to environment.</li> </ul>	CO 1: Understand Communicate in a variety of social, travel and work-related situations CO 2: Understand conversation skills and Widen vocabulary skills CO 3: Apply proficiency in all major skills CO 4: Apply Practice English in 'real life' situations CO 5: Learn how to apply grammar knowledge

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21	BTBSC 207	Engineering Chemistry Lab	<ul style="list-style-type: none"> <li>• To understand the method for the determination of hardness in water and purification process.</li> <li>• To understand about different types of volumetric analysis.</li> <li>• To learn about properties of lubricant oil.</li> <li>• To Synthesize a small drug molecule and analyse a salt sample</li> </ul>	<p>CO1: Understand the method for the determination of hardness in water and purification process.</p> <p>CO2: understand about different types of volumetric analysis.</p> <p>CO3: learn about properties of lubricant oil.</p> <p>CO4: Synthesize a small drug molecule and analyse a salt sample</p>
22	BTHSMC 208	Human Values Activities	<ul style="list-style-type: none"> <li>• To Understand the basic guidelines, content and process for value education.</li> <li>• To develop understanding different Harmony concept.</li> <li>• To understand professional ethics and natural acceptance of human values.</li> </ul>	<p>CO1: Analyze Basic Guidelines, Content and Process for Value Education.</p> <p>CO2: Understanding Harmony in the Human Being - Harmony in Myself.</p> <p>CO3: Understand Harmony in the Family and Society- Harmony in Human-Human Relationship. Recollect and narrate an incident in your life.</p> <p>CO4: Understand Harmony in the Nature and Existence – Whole existence as Coexistence. Summarize the core message of this course grasped by you.</p> <p>CO5: List and Implicate the above Holistic Understanding of Harmony on Professional Ethics. Natural acceptance of human values.</p>
23	BTESC 209	Manufacturing Practices Workshop	<ul style="list-style-type: none"> <li>• To discuss the modules include training on different trades like Fitting, Carpentry and Casting</li> <li>• To learn various joints are made using wood and other metal pieces.</li> <li>• To develop machining skills in students.</li> </ul>	<p>CO1: Describe cast different parts through Carpentry.</p> <p>CO2: Define control manufacturing via computers.</p> <p>CO3: Understanding use power tools and fitting tools.</p> <p>CO4: Knowledge of various welding operations</p> <p>CO5: Understanding different metallic and non-metallic objects.</p>
24	BTESC210A	Basic Civil Engineering Lab	<ul style="list-style-type: none"> <li>• To understand training on different trades like Fitting, Carpentry and Casting</li> <li>• To learn various joints are made using wood and other metal pieces.</li> <li>• To develop machining skills in students.</li> </ul>	<p>CO1: Conduct survey and collect field data.</p> <p>CO2: Review field notes from survey data.</p> <p>CO3: Interpret survey data and compute areas and volumes.</p> <p>CO4: Describe Total station and measurement</p> <p>CO5: Describe various water fittings and find out the various fluids properties</p>

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25	BTESC 210B	Basic Electrical Engineering Lab	<ul style="list-style-type: none"> <li>• To understand training on different trades like Fitting, Carpentry and Casting</li> <li>• To learn various joints are made using wood and other metal pieces.</li> <li>• To develop machining skills in students.</li> </ul>	<p>CO1: Adapt knowledge regarding the various laws and principles associated with electrical systems.</p> <p>CO2: Adapt knowledge regarding electrical machines and apply them for practical problems.</p> <p>CO3: Understand various types' Electrical Equipments.</p> <p>CO4: Understanding digital measuring equipments.</p>
26	BTESC 211	Computer Aided Machine Drawing	<ul style="list-style-type: none"> <li>• To design, develop and analyze simple linear and non linear computer based drawing.</li> <li>• To identify and apply the suitable knowledge of computers to understand the shape and size of Drawing Objects.</li> </ul>	<p>CO1: Understand the conventions and the method of engineering drawing.</p> <p>CO2: Interpret engineering drawings using fundamentals of different views to construct basic and intermediate geometry.</p> <p>CO3: Adapt theory of sectioning and Section of Solids.</p> <p>CO4: Classify the theory of projection.</p> <p>CO5: Understand drawing skill in the form of Computer Graphics.</p>
27	BTSODECA212	Social Outreach, Discipline & Extra Curricular Activities	<ul style="list-style-type: none"> <li>• To allowing students to explore strengths and talents outside of academics.</li> <li>• To helping students develop stronger time-management and organizational skills.</li> <li>• To giving students the opportunity to build friendships and participate in group activities outside of the tight circle of the regular classroom.</li> <li>• To helping to build confidence and self-esteem.</li> </ul>	<p>CO1: Develop their self-confidence, leadership qualities, and their responsibilities towards the community.</p> <p>CO2: Have an impact on academic development, personal development, and civic responsibility</p> <p>CO3: Understand the value of Social Work.</p> <p>CO4: Understand the Significance of Discipline in student's Life</p> <p>CO5: Contribute towards in social up-gradation by social organization like, Art of Living, Yoga etc., Blood donation, Awareness programs, personality development programs.</p>
28	BTCSBSC301	Advanced Engineering Mathematics	<ul style="list-style-type: none"> <li>• To introduce students with ordinary differential equations and the methods for solving these equations.</li> <li>• To use differential equations as models for real world phenomena</li> <li>• To integrate the knowledge accumulated in the calculus sequence to solve applied problems</li> <li>• To introduce the fundamentals of Linear Algebra and Complex Analysis</li> <li>• To provide a rigorous introduction to upper level mathematics which is necessary for students of engineering, physical sciences and mathematics</li> </ul>	<p>CO1: Acquire knowledge about Fourier series</p> <p>CO2: Understand Laplace's equation in two dimensions</p> <p>CO3: Know the Functions of a complex variable</p> <p>CO4: Know Z Transforms.</p> <p>CO5: Gain the knowledge about boundary value problems.</p>

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29	BTCSHSMC 302	Managerial Economics and Financial Accounting	<ul style="list-style-type: none"> <li>• To discuss the economic concepts, theories, tools, and methodologies to solve practical problems in a business.</li> <li>• To provide the student with basic understanding of financial accounting that can be used in decision making techniques.</li> </ul>	CO1: Understand the conceptual knowledge of accounting CO2: Sharpen the analytical skills through integrating their knowledge of economic theories with decision making techniques. CO3: Analyze different market structures and pricing theories. CO4: Discuss the accounting process and preparation of final accounts of sole trader CO5: Understand the mechanism of demand and supply.
30	BTCSDESC303	Digital Electronics	<ul style="list-style-type: none"> <li>• To Convert different type of codes and number systems which are used in digital transmission and computer systems.</li> <li>• To Apply the codes and number systems converting circuits and Compare different types of logic families which are the basic unit of different types of logic gates in the domain of economy, performance and efficiency.</li> <li>• To Analyze different types of digital electronic circuit using various mapping and logical tools and know the techniques to prepare the most simplified circuit using various mapping and mathematical methods.</li> <li>• To Design different types of with and without memory element digital electronic circuits for particular operation, within the real time of economic, performance, efficiency, user friendly and environmental constraints.</li> <li>• To Assess the nomenclature and technology in the area of various memory devices used and apply the memory devices in different types of digital circuits for real world application.</li> </ul>	CO1: Understand working of logic families and logic gates. CO2: Design and implement Combinational and Sequential logic circuits. CO3: Classification and characteristics of memories CO4: Understand the process of Analog to Digital conversion and Digital to Analog Conversion CO5: Use PLDs to implement the given logical problem

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31	BTCSPCC304	Data Structures and Algorithms	<ul style="list-style-type: none"> <li>• To impart the basic concepts of data structures and algorithms.</li> <li>• To understand concepts about searching and sorting techniques.</li> <li>• To understand basic concepts about stacks, queues, lists, trees and graphs.</li> <li>• To understand about writing algorithms and step by step approach in solving problems with the help of fundamental data structures.</li> </ul>	<p>CO1: Analyze the algorithms to determine the time and Computation complexity and justify the correctness.</p> <p>CO2: Implement given Search problem (Linear Search and Binary Search).</p> <p>CO3: Implement Stack and Queue and analyze the same to determine the time and computation complexity.</p> <p>CO4: Write an algorithm Selection Sort, Bubble Sort, Insertion Sort, Quick Sort, Merge Sort, Heap Sort and compare their performance in term of Space and Timecomplexity.</p> <p>CO5: Implement Graph search and traversal algorithms and determine the time and computation complexity.</p>
32	BTCSPCC305	Object Oriented Programming	<ul style="list-style-type: none"> <li>• To Perform object oriented programming to develop solutions to problems demonstrating usage of control structures, modularity, I/O. and other standard language constructs.</li> <li>• To Demonstrate adeptness of object oriented programming in developing solutions to problems demonstrating usage of data abstraction, encapsulation, and inheritance.</li> <li>• To Demonstrate ability to implement one or more patterns involving realization of an abstract interface and utilization of polymorphism in the solution of problems which can take advantage of dynamic dispatching.</li> <li>• To Learn syntax, features of, and how to utilize the Standard Template Library. Learn other features of the C++ language including templates, exceptions, forms of casting, conversions, covering all features of the language.</li> </ul>	<p>CO1: Understand the features of C++ supporting object oriented programming.</p> <p>CO2: Understand the relative merits of C++ as an object oriented programming language.</p> <p>CO3: Understand how to produce object-oriented software using C++.</p> <p>CO4: Understand how to apply the major object-oriented concepts to implement object oriented programs in C++, encapsulation, inheritance and polymorphism.</p> <p>CO5: Understand advanced features of C++ specifically stream I/O, templates and operator Overloading.</p>

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33	BTCSPCC306	Software Engineering	<ul style="list-style-type: none"> <li>• To help students to develop skills that will enable them to construct software of high quality – software that is reliable, and that is reasonably easy to understand, modify and maintain.</li> <li>• To foster an understanding of why these skills are important.</li> </ul>	<p>CO1: Understand large scale software development from a broader perspective, and function in multidisciplinary teams.</p> <p>CO2: Apply knowledge gained in the course to practical software development situations.</p> <p>CO3: Design software systems to meet desired needs with realistic constraints.</p> <p>CO4: Describe software development activities.</p> <p>CO5: Discuss contemporary issues in Software development and engage in life-long learning, understand professional and ethical responsibility</p>
34	BTCSPCC 307	Data Structures and Algorithms Lab	<p>1 To impart the basic concepts of data structures and algorithms.</p> <p>2 To understand concepts about searching and sorting techniques.</p> <p>3 To Understand basic concepts about stacks, queues, lists, trees and graphs.</p>	<p>CO1: Select appropriate data structures as applied to specified problem definition.</p> <p>CO2: Implement operations like searching, insertion, and deletion, traversing mechanism etc. on various data structures.</p> <p>CO3: Implement Linear and Non-Linear data structures.</p> <p>CO4: Implement appropriate sorting/searching technique for given problem.</p> <p>CO5: Determine and analyze the complexity of given Algorithms.</p>
35	BTCSPCC 308	Object Oriented Programming Lab	<ul style="list-style-type: none"> <li>• To Perform object oriented programming for develop solutions to problems, demonstrating usage of control structures, modularity, I/O and other standard language constructs.</li> <li>• To Demonstrate adeptness of object oriented programming in developing solutions to problems demonstrating usage of data abstraction, encapsulation, and inheritance.</li> </ul>	<p>CO1: Understand the features of C++ supporting object oriented programming.</p> <p>CO2: Understand the relative merits of C++ as an object oriented programming language.</p> <p>CO3: Understand how to produce object-oriented software using C++.</p> <p>CO4: Understand how to apply the major object-oriented concepts to implement object oriented programs in C++, encapsulation, inheritance and polymorphism.</p> <p>CO5: Understand advanced features of C++ specifically stream I/O, templates and operator overloading.</p>
36	BTCSPCC 309	Software Engineering Lab	<ul style="list-style-type: none"> <li>• To help students to develop skills that will enable them to construct software of high quality – software that is reliable and reasonably also easy to understand, modify and maintain.</li> <li>• To foster an understanding of why these skills are important.</li> </ul>	<p>CO1: Create models for software applications.</p> <p>CO2: Create DFD's for software applications.</p> <p>CO3: Understand the different UML notations for designing software.</p>

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37	BTCSPCC 310	Digital Electronics Lab	<ul style="list-style-type: none"> <li>Students will learn and understand the Basics of digital electronics and able to design basic logic circuits, combinational and sequential circuits</li> </ul>	<p>CO1: Convert different type of codes and number systems which are used in digital transmission and computer systems.</p> <p>CO2: Apply the codes and number systems converting circuits and Compare different types of logic families which are the basic unit of different types of logic gates in the domain of economy, performance and efficiency.</p> <p>CO3: Analyze different types of digital electronic circuit using various mapping and logical tools and know the techniques to prepare the most simplified circuit using various mapping and mathematical methods.</p> <p>CO4: Design different types of with and without memory element digital electronic circuits for particular operation, within the real time of economic, performance, efficiency, user friendly and environmental constraints.</p> <p>CO5: Assess the nomenclature and technology in the area of various memory devices used and apply the memory devices in different types of digital circuits for real world application.</p>
38	BTCSPSIT 311	Industrial Training/ Seminar	<ul style="list-style-type: none"> <li>To acquire and apply fundamental principles of engineering.</li> <li>To identify, formulate and present model problems.</li> <li>To identify, formulate and model problems and find engineering solution based on a systems approach.</li> </ul>	<p>CO1: Capability to acquire and apply fundamental principles of engineering.</p> <p>CO2: Become master in one's specialized technology</p> <p>CO3: Become updated with all the latest changes in technological world.</p> <p>CO4: Ability to identify, formulate and model problems and find engineering solution based on a systems approach.</p>
39	BTCSSODECA 312	Social Outreach, Discipline & Extra Curricular Activities	<ul style="list-style-type: none"> <li>To allowing students to explore strengths and talents outside of academics.</li> <li>To helping students develop stronger time-management and organizational skills.</li> <li>To giving students the opportunity to build friendships and participate in group activities outside of the tight circle of the regular classroom.</li> <li>To helping to build confidence and self-esteem.</li> </ul>	<p>CO1: Develop their self-confidence, leadership qualities, and their responsibilities towards the community.</p> <p>CO2: Have an impact on academic development, personal development, and civic responsibility</p> <p>CO3: Understand the value of Social Work.</p> <p>CO4: Understand the Significance of Discipline in student's Life</p> <p>CO5: Contribute towards in social up-gradation by social organization like, Art of Living, Yoga etc., Blood donation, Awareness programs, personality development programs</p>

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40	BTCBSBSC 401	Discrete Mathematics Structure	<ul style="list-style-type: none"> <li>• To introduce a number of Discrete Mathematical Structures (DMS) found to be serving as tools even today in the development of theoretical computer science.</li> <li>• To solve problems occurred in the development of programming languages.</li> <li>• To familiarize students with concepts and techniques of graph theory, and sets apart from languages of logic and proof methods.</li> </ul>	<p>CO1: Recognize the random variables, Find mean, variance and learned some discrete and continuous probability distributions with practical exposure.</p> <p>CO2: Understand the all distributions .Acquainted with the principle of least squares method for fitting the curve to the given data points.</p> <p>CO3: Understanding how solve and analyzing problems using linear programming and other mathematical programming algorithms.</p> <p>CO4: Understand classical optimization using differential calculus.</p> <p>CO5: Understand the application of Linear programming like Transportation and Assignment problem.</p>
41	BTCSHSMC 402	Technical Communication	<ul style="list-style-type: none"> <li>• To understand the characteristics of technical writing</li> <li>• To understand complex engineering ideas for targeted audiences.</li> <li>• To understand the advance technical writing in professional documents.</li> <li>• To write effective technical and business documents that are grammatically and stylistically correct</li> </ul>	<p>CO1: Understand basic communication skills used in technical areas.</p> <p>CO2: Understand technical materials, texts and information design &amp; development.</p> <p>CO3: Adapt an effective oral presentation, displaying the ability to engage the audience by employing a suitable delivery style, appropriate language and quality visual aids.</p> <p>CO4: Interpret Technical Reports and its types &amp; features</p> <p>CO5: Understand the structure and formats of technical articles and proposals</p>
42	TCSESC 403	Microprocessor & Interfaces	<ul style="list-style-type: none"> <li>• To understand the various fundamentals of microprocessor including 16-bit and 32-bit microcontrollers</li> <li>• To understand the 8085 Architecture and timing diagrams and execution cycles.</li> <li>• To understand the 8051, 8255 etc. Architecture and timing diagrams and execution cycles.</li> <li>• To know the various instructions used in programming, and about external communication interface.</li> </ul>	<p>CO1: Understand the architecture of microprocessor and concept of microcontroller.</p> <p>CO2: Know Concept of assembly language programming.</p> <p>CO3: Know Concept of interfacing design of peripherals like I/O, A/D, D/A, timer, counter and memory devices etc.</p> <p>CO4: Develop systems using different microcontrollers</p> <p>CO5: Describe Synchronous and Asynchronous Communication. RS232, SPI, I2C, Stepper motor interfacing and its applications.</p>

## Course Outcomes

S. No.	Course Code	Course Title	Course Objective	Expected Outcome
43	BTCSPCC 404	Database Management System	<ul style="list-style-type: none"> <li>• To understand the different issues involved in the design and implementation of a database system.</li> <li>• To study the physical and logical database designs, database modeling, relational, hierarchical, and network models</li> <li>• To understand and use data manipulation language to query, update, and manage a Database</li> <li>• To develop an understanding of essential DBMS concepts such as: database security, integrity, concurrency, distributed database, and intelligent database, Client/Server (Database Server), Data Warehousing.</li> <li>• To design and build a simple database system and demonstrate competence with the fundamental tasks involved with modeling, designing, and implementing a DBMS.</li> </ul>	<p>CO1: Understand given query write relational algebra expressions for that query and optimize the developed expressions</p> <p>CO2: Understand given specification of the requirement design the databases using E R method and normalization.</p> <p>CO3: Understand given specification construct the SQL queries for Open source and Commercial DBMS -MYSQL, ORACLE, and DB2.</p> <p>CO4: Demonstrate given query optimize its execution using Query optimization algorithms</p> <p>CO5: Discuss a given transaction-processing system, determine the transaction atomicity, consistency, isolation, and durability.</p>
44	BTCSPCC 405	Theory of Computation	<ul style="list-style-type: none"> <li>• To Develop a formal notation for strings, languages and machines.</li> <li>• To Design finite automata to accept a set of strings of a language.</li> <li>• To Prove that a given language is regular and apply the closure properties of languages.</li> <li>• To Design context free grammars to generate strings from a context free language and convert them into normal forms.</li> <li>• To Prove equivalence of languages accepted by Push Down Automata and languages generated by context free grammars</li> <li>• To Identify the hierarchy of formal languages, grammars and machines.</li> <li>• To Distinguish between computability and non-computability and Decidability and un-decidability.</li> </ul>	<p>CO1: Calculate formal notation for strings, languages and machines.</p> <p>CO2: Design finite automata to accept a set of strings of a language.</p> <p>CO3: Understand language determine whether the given language is regular or not.</p> <p>CO4: Design context free grammars to generate strings of context free language.</p> <p>CO5: Determine equivalence of languages accepted by Push Down Automata and languages generated by context free grammars</p> <p>CO6: Contrast the hierarchy of formal languages, grammars and machines.</p>

## Course Outcomes

S. No.	Course Code	Course Title	Course Objective	Expected Outcome
45	BTCSPCC 406	Data Communication and Computer Networks	<ul style="list-style-type: none"> <li>• To Understand about the evolution of data communication and networking paradigms</li> <li>• To Understand the principles of data communication, channel characteristics, signaling, modulation and encoding, and multiplexing (SONET/SDH)</li> <li>• To Know about the various transmission media, their comparative study.</li> <li>• To Understand about the channel error detection and correction, MAC protocols, Ethernet and WLAN</li> <li>• To Understand the operations of TCP/UDP, FTP, HTTP, SMTP, SNMP, etc.</li> </ul>	<p>CO1: Explain the functions of the different layer of the OSI Protocol.</p> <p>CO2: Draw the functional block diagram of wide-area networks (WANs), local area networks (LANs) and Wireless LANs (WLANs) describe the function of each block.</p> <p>CO3: Calculate requirement (small scale) of wide-area networks (WANs), local area networks (LANs) and Wireless LANs (WLANs) design it based on the market available component</p> <p>CO4: Calculate problem related TCP/IP protocol developed the network programming.</p> <p>CO5: Discuss DNS DDNS, TELNET, EMAIL, File Transfer Protocol (FTP), WWW, HTTP, SNMP, Bluetooth, Firewalls using open source available software and tools.</p>
46	BTCSPCC 407	Microprocessor & Interfaces Lab	<ul style="list-style-type: none"> <li>• To expose students for operation of typical microprocessor (8085) trainer kit.</li> <li>• To prepare the students to solve different problems by developing different Programs.</li> <li>• To develop the quality of assessing and analyzing the obtained data.</li> </ul>	<p>CO1: Identify relevant information to supplement to the Microprocessor and Microcontroller course.</p> <p>CO2: Understand strategies and select proper mnemonics and run their program on the training boards.</p> <p>CO3: Understand and Practice different types of programming keeping in mind technical issues and evaluate possible causes of discrepancy in practical experimental observations in comparison.</p> <p>CO4: Develop testing and experimental procedures on Microprocessor and Microcontroller analyze their operation under different cases.</p> <p>CO5: Prepare professional quality textual and computational results, incorporating accepted data analysis and synthesis methods, simulation software, and word processing tools.</p>

## Course Outcomes

S. No.	Course Code	Course Title	Course Objective	Expected Outcome
47	BTCSPCC 408	Database Management System Lab	<ul style="list-style-type: none"> <li>• To Understand Tables with necessary constraints ,keys and data types, Inserting data and manipulating data as per needs</li> <li>• To Understand SQL Queries to retrieve required information from single/multiple tables , Creating views and manipulating them as needed</li> <li>• To Implementing Operations on relations (tables) using PL/SQL</li> <li>• To Writing triggers for implementing automatic operations and implementing constraints</li> </ul>	CO1: Design a Database without anomalies as per requirements CO2: Construct complex queries to retrieve required information from database CO3: Understand SQL for generating necessary reports. CO4: Design procedures and functions for required database tasks. CO5: Demonstrate assertions to implement integrity constraints on multiple tables
48	BTCSPCC 409	Network Programming Lab	<ul style="list-style-type: none"> <li>• To introduce Network related commands and configuration files in Linux Operating System.</li> <li>• To introduce tools for Network Traffic Analysis and Network Monitoring</li> <li>• To practice Network Programming using Linux System Calls.</li> <li>• To design and deploy Computer Networks.</li> </ul>	CO1: Apply knowledge of different techniques of error detection and correction to detect and solve error bit during data transmission. CO2: Understand and building the skills of routing mechanisms. CO3: Explain how a collision occurs and how to solve it. CO4: Explain familiar with network tools and network programming. CO5: Adapt with the basic protocols of computer networks, and how they can be used to assist in network design and implementation.
49	BTCSPCC 410	Linux Shell Programming Lab	<ul style="list-style-type: none"> <li>• study the basic and administration concepts in Linux</li> </ul>	CO1: Make students able to implement CPU scheduling algorithms and Bankers algorithm used for deadlock avoidance and prevention. CO2: Implement page replacement and memory management algorithms. CO3: Apply UNIX/LINUX operating system commands. CO4: Understand different UNIX/LINUX shell scripts and execute various shell programs. CO5: Implement virtualization by installing Virtual Machine software.

## Course Outcomes

S. No.	Course Code	Course Title	Course Objective	Expected Outcome
50	BTCSPCC 411	Java Lab	<ul style="list-style-type: none"> <li>• To understand Object Oriented Programming concepts and basic characteristics of Java</li> <li>• To know the principles of packages, inheritance and interfaces</li> <li>• To define exceptions and use I/O streams</li> <li>• To develop a java application with threads and generics classes</li> </ul>	CO1: Understand the features of C++ supporting object oriented programming CO2: Understand the relative merits of C++ as an object oriented programming language CO3: Create object-oriented software using C++ CO4: Apply object-oriented concepts to implement object oriented programs in C++, encapsulation, inheritance and polymorphism CO5: Understand advanced features of C++ specifically stream I/O, templates and operator overloading.
51	BTCSSODE CA 412	Social Outreach, Discipline & Extra Curricular Activities	<ul style="list-style-type: none"> <li>• To allowing students to explore strengths and talents outside of academics.</li> <li>• To helping students develop stronger time-management and organizational skills.</li> <li>• To giving students the opportunity to build friendships and participate in group activities outside of the tight circle of the regular classroom.</li> <li>• To helping to build confidence and self-esteem.</li> </ul>	CO1: Develop their self-confidence, leadership qualities, and their responsibilities towards the community. CO2: Have an impact on academic development, personal development, and civic responsibility CO3: Understand the value of Social Work. CO4: Understand the Significance of Discipline in student's Life CO5: Contribute towards in social up-gradation by social organization like, Art of Living, Yoga etc., Blood donation, Awareness programs, personality development programs.
52	BTCSESC 501	Information Theory & Coding	<ul style="list-style-type: none"> <li>• To study how information is measured in terms of probability and entropy, and the relationships among conditional and joint entropies.</li> <li>• To study coding schemes, including error correcting codes.\</li> </ul>	CO1: Design the channel performance using Information theory. CO2: Comprehend various error control code properties CO3: Apply linear block codes for error detection and correction CO4: Apply convolution codes for performance analysis & cyclic codes for error detection and correction. CO5: Design BCH & RS codes for Channel performance improvement against burst errors.
53	BT CSPCC 502	Compiler Design	<p>To understand and list the different stages in the process of compilation.</p> <ul style="list-style-type: none"> <li>• To Identify different methods of lexical analysis</li> <li>• To Design top-down and bottom-up parsers</li> <li>• To Identify synthesized and inherited attributes</li> <li>• To Develop syntax directed translation schemes</li> <li>• To Develop algorithms to generate code for a target machine</li> </ul>	CO1: Understand grammar specification to develop the lexical analyzer CO2: Understand parser specification design top-down and bottom-up Parsers CO3: Develop syntax directed translation schemes CO4: Develop algorithms to generate code for a target machine

## Course Outcomes

S. No.	Course Code	Course Title	Course Objective	Expected Outcome
54	BT CSPCC 503	Operating System	<ul style="list-style-type: none"> <li>• To learn the mechanisms of Operating System to handle processes and threads.</li> <li>• To learn the mechanisms involved in memory management in OS.</li> <li>• To gain knowledge on distributed operating system concepts that includes architecture, Mutual exclusion algorithms, deadlock detection algorithms and agreement protocols</li> <li>• To know the components and management aspects</li> </ul>	<p>CO1: Analyze the structure of OS and basic architectural components involved in OS design</p> <p>CO2: Analyze and design the applications to run in parallel either using process or thread models of different OS</p> <p>CO3: Analyze the various device and resource management techniques for timesharing and distributed systems</p> <p>CO4: Understand the Mutual exclusion, Deadlock detection and agreement protocols of Distributed operating system.</p>
55	BTCSPCC 504	Computer Graphics & Multimedia	<ul style="list-style-type: none"> <li>• To understand contemporary graphics principles and graphics hardware.</li> <li>• To introduce comprehensive introduction to computer graphics leading to the ability to understand contemporary terminology, progress, issues, and trends.</li> <li>• To go thorough introduction to computer graphics techniques, focusing on 3D modeling, image synthesis, and rendering.</li> </ul>	<p>CO1: List the basic concepts used in computer graphics.</p> <p>CO2: Implement various algorithms to scan, convert the basic geometrical primitives, transformations, Area filling, clipping.</p> <p>CO3: Describe the importance of viewing and projections.</p> <p>CO4: Define the fundamentals of animation, virtualreality and its related technologies.</p>
56	BTCSPCC 505	Analysis of Algorithms	<ul style="list-style-type: none"> <li>• To Analyze the asymptotic performance of algorithms.</li> <li>• To Write rigorous correctness proofs for algorithms.</li> <li>• To Demonstrate a familiarity with major algorithms and data structures.</li> <li>• To Apply important algorithmic design paradigms and methods of analysis.</li> <li>• To Synthesize efficient algorithms in common engineering design situations.</li> </ul>	<p>CO1: Discuss Algorithms based on asymptotic analysis and justify the correctness of algorithms.</p> <p>CO2: Describe the greedy paradigm and explain when an algorithmic design situation calls for it.</p> <p>CO3: Describe the divide-and-conquer paradigm</p> <p>CO4: Describe the dynamic-programming paradigm and analyze it to determine its computational complexity.</p>

## Course Outcomes

S. No.	Course Code	Course Title	Course Objective	Expected Outcome
57	BTCSPC 506A	Wireless Communication	<ul style="list-style-type: none"> <li>• To understand the architecture of Wireless Networks.</li> <li>• To identify the functionalities of layers in architecture.</li> <li>• To analyze the working of main protocols of all layers.</li> </ul>	CO1: Explain the Classification of mobile communication systems CO2: Analyze the radio channel characteristics and the cellular principle CO3: Analyze the measures to increase the capacity in GSM systems-sectorization and Spatial Filtering for Interference Reduction CO4: Adapt and analyze improved data services in cellular communication.
58	BTCSPC 506B	Human-Computer Interaction	<ul style="list-style-type: none"> <li>• To know what the user-centered design cycle and how to practice this approach to design your own website or other interactive software systems</li> <li>• To critique existing website and other interactive software using guidelines from human factor theories</li> <li>• To analyze one after another the main features of a GUI: the use of colors, organization and layout of content, filling the interface with useful and relevant information, and communication techniques; and to critique designs in order to provide better solutions</li> </ul>	CO1: Describe what interaction design is and how it relates to human computer interaction and other fields. CO2: Describe the social mechanisms that are used by people to communicate and collaborate. CO3: Prepare the nature of user frustration and how to reduce it. CO4: Describe how technologies can be designed to change people's attitudes and behavior.
59	BTCSPC 506C	Bioinformatics	<ul style="list-style-type: none"> <li>• To use bioinformatics in your own work.</li> <li>• To Build a solid foundation and acquire the vocabulary you need to supervise or to communicate with others who use these tools.</li> </ul>	CO1: Discuss the basic concepts of Bioinformatics and its significance in Biological data analysis. CO2: Describe the history, scope and importance of Bioinformatics and role of internet in Bioinformatics. CO3: Explain about the methods to characterize and manage the different types of Biological data. CO4 : Classify different types of Biological Databases. CO5 : Discuss basics of sequence alignment and analysis. CO6 : Explain biological macromolecular structures and structure prediction methods.

## Course Outcomes

S. No.	Course Code	Course Title	Course Objective	Expected Outcome
60	BTCSPCC 507	Computer Graphics & Multimedia Lab	<ul style="list-style-type: none"> <li>• To Implement different computer graphics algorithms, this algorithm make them learn about the creation of primitives of graphics, storage and generation.</li> <li>• To Create interactive graphics applications in C++ using one or more graphics application programming interfaces.</li> <li>• To Write programs that demonstrate geometrical transformations.</li> </ul>	CO1: List the basic concepts used in computer graphics. CO2: Implement various algorithms to scan, convert the basic geometrical primitives, transformations, Area filling, clipping. CO3: Describe the importance of viewing and projections. CO4: Define the fundamentals of animation, virtualreality and its related technologies.
61	BTCSPCC 508	Compiler Design Lab	<p>To Deepen the understanding of compiler design - Develop problem solving ability using programming - Develop ability to design and analyze a compiler</p> <ul style="list-style-type: none"> <li>• To implement Lexical Analyzer using Lex tool &amp; Syntax Analyzer or parser using YACC Tool</li> <li>• To implement front end of the compiler by means of generating Intermediate codes.</li> <li>• To implement code optimization techniques.</li> </ul>	CO1: Discuss grammar specification develop the lexical analyzer CO2: Discuss parser specification design top-down and bottom-up Parsers CO3: Develop syntax directed translation schemes CO4: Develop algorithms to generate code for a target machine.
62	BTCSPCC 509	Analysis of Algorithms Lab	<ul style="list-style-type: none"> <li>• To Design and implement efficient algorithms for a specified application.</li> <li>• To Strengthen the ability to identify and apply the suitable algorithm for the given real world problem.</li> </ul>	CO1: Discuss algorithms analyze worst-case running times of algorithms based on asymptotic analysis and justify the correctness of algorithms. CO2: Describe the greedy paradigm and explain when an algorithmic design situation calls for it. For a given problem develop the greedy algorithms. CO3: Describe the divide-and-conquer paradigm and explain when an algorithmic design situation calls for it. Synthesize divide-and-conquer algorithms. Derive and solve recurrence relation. CO4: Describe the dynamic-programming paradigm and explain when an algorithmic design situation calls for it. For a given problems of dynamic-programming and develop the dynamic programming algorithms, and analyze it to determine its computational complexity.

## Course Outcomes

S. No.	Course Code	Course Title	Course Objective	Expected Outcome
63	BTCSPCC 510	Advance Java Lab	<ul style="list-style-type: none"> <li>• To Using Graphics, Animations and Multithreading for designing Simulation and Game based applications.</li> <li>• To Design and develop GUI applications using Abstract Windowing Toolkit (AWT), Swing and Event Handling.</li> <li>• To Design and develop Web applications</li> <li>• To Designing Enterprise based applications by encapsulating an application's business logic.</li> <li>• To Designing applications using pre-built frameworks.</li> </ul>	CO1: Learn to access database through Java programs, using Java Data Base Connectivity (JDBC) CO2: Create dynamic web pages, using Servlets and JSP. CO3: Make a reusable software component, using Java Bean. CO4: Invoke the remote methods in an application using Remote Method Invocation (RMI) CO5: Understand the multi-tier architecture of web-based enterprise applications using Enterprise JavaBeans (EJB)
64	BTCSPSIT 511	Industrial Training & Seminar	<ul style="list-style-type: none"> <li>• To acquire and apply fundamental principles of engineering.</li> <li>• To identify, formulate and present model problems.</li> <li>• To identify, formulate and model problems and find engineering solution based on a systems approach.</li> </ul>	CO1: Capability to acquire and apply fundamental principles of engineering. CO2: Become master in one's specialized technology CO3: Become updated with all the latest changes in technological world. CO4: Ability to identify, formulate and model problems and find engineering solution based on a systems approach.
65	BTCSSODE CA 512	Social Outreach, Discipline & Extra Curricular Activities	<ul style="list-style-type: none"> <li>• To allowing students to explore strengths and talents outside of academics.</li> <li>• To helping students develop stronger time-management and organizational skills.</li> <li>• To giving students the opportunity to build friendships and participate in group activities outside of the tight circle of the regular classroom.</li> <li>• To helping to build confidence and self-esteem.</li> </ul>	CO1: Develop their self-confidence, leadership qualities, and their responsibilities towards the community. CO2: Have an impact on academic development, personal development, and civic responsibility CO3: Understand the value of Social Work. CO4: Understand the Significance of Discipline in student's Life CO5: Contribute towards in social up-gradation by social organization like, Art of Living, Yoga etc., Blood donation, Awareness programs, personality development programs.
66	BTCSESC 601	Digital Image Processing	<ul style="list-style-type: none"> <li>• To learn digital image fundamentals.</li> <li>• To be exposed to simple image processing techniques.</li> <li>• To be familiar with image compression and segmentation techniques.</li> <li>• To learn to represent image in form of features.</li> </ul>	CO1: Discuss digital image fundamentals. CO2: Apply image enhancement and restoration techniques. CO3: Use image compression and segmentation Techniques. CO4: Discuss features of images.

## Course Outcomes

S. No.	Course Code	Course Title	Course Objective	Expected Outcome
67	BTCSPCC 602	Machine Learning	<ul style="list-style-type: none"> <li>• To introduce students to the basic concepts and techniques of Machine Learning.</li> <li>• To develop skills of using recent machine learning software for solving practical problems.</li> <li>• To gain experience of doing independent study and research.</li> </ul>	CO1: Create intelligent agents for search and games CO2: Solve AI problems through programming with Python CO3: Learning optimization and inference algorithms for model learning CO4: Design and develop programs for an agent to learn and act in a structured environment.
68	BTCSPCC 603	Information Security System	<ul style="list-style-type: none"> <li>• To enhance knowledge and techniques for enforcement of security with some emphasis on cryptography.</li> <li>• To develop an understanding of security policies (such as authentication, integrity and confidentiality).</li> </ul>	CO1: Understand key terms and concepts in cyber law, intellectual property and cyber crimes, trademarks and domain theft. CO2: Determine computer technologies, digital evidence collection, and evidentiary reporting in forensic acquisition. CO3: Understand approaches for incident analysis and response.
69	BTCSPCC 604	Computer Architecture and Organization	<ul style="list-style-type: none"> <li>• To discuss the basic concepts and structure of computers.</li> <li>• To understand concepts of register transfer logic and arithmetic operations.</li> <li>• To explain different types of addressing modes and memory organization.</li> <li>• To learn the different types of serial communication techniques.</li> <li>• To summarize the Instruction execution stages.</li> </ul>	CO1: Evaluate performance of the computer system and decode machine language CO2: Design arithmetic and logic unit CO3: Design and analyze pipelined control units CO4: Design parallel processing architectures.
70	BTCSPCC 605	Artificial Intelligence	<ul style="list-style-type: none"> <li>• To introduce the basic principles, techniques, and applications of Artificial Intelligence.</li> <li>• To become familiar with basic principles of AI toward problem solving, inference, perception, knowledge representation, and learning.</li> </ul>	CO1: Demonstrate fundamental understanding of the history of artificial intelligence (AI) and its foundations. CO2: Apply basic principles of AI in solutions that require problem solving, inference, perception, knowledge representation, and learning. CO3: Demonstrate proficiency developing applications in an 'AI language', expert system shell, or data mining tool. CO4: Demonstrate an ability to share in discussions of AI, its current scope and limitations, and societal implications.

## Course Outcomes

S. No.	Course Code	Course Title	Course Objective	Expected Outcome
71	BTCSPCC 606	Cloud Computing	<ul style="list-style-type: none"> <li>• To understand the basics of Cloud Computing.</li> <li>• To understand the movement from a traditional network infrastructure to a Cloud solution.</li> </ul>	<p>CO1: Analyze the Cloud computing setup with its vulnerabilities and applications using different architectures.</p> <p>CO2: Design different workflows according to requirements and apply map reduce programming model.</p> <p>CO3: Apply and design suitable Virtualization concept, Cloud Resource Management and design scheduling algorithms.</p> <p>CO4: Create combinatorial auctions for cloud resources and design scheduling algorithms for computing clouds</p> <p>CO5: Assess cloud Storage systems and Cloud security, the risks involved, its impact and develop cloud application</p> <p>CO6: Know the impact of engineering on legal and societal issues involved in addressing the security issues of cloud computing.</p>
72	BTCSPEC 607A	Distributed System	<ul style="list-style-type: none"> <li>• To provide an introduction to the fundamentals of distributed computer systems, assuming the availability of facilities for data transmission.</li> <li>• To demonstrate the knowledge of the core architectural aspects of distributed systems.</li> </ul>	<p>CO1: Distinguish distributed computing paradigm from other computing paradigms</p> <p>CO2: Identify the core concepts of distributed systems</p> <p>CO3: Illustrate the mechanisms of inter process communication in distributed system</p> <p>CO4: Apply appropriate distributed system principles in ensuring transparency, consistency and fault-tolerance in distributed file system</p> <p>CO5: Compare the concurrency control mechanisms in distributed transactional environment</p> <p>CO6: Discuss the need for mutual exclusion and election algorithms in distributed systems</p>
73	BTCSPEC 607B	Software Defined Network	<ul style="list-style-type: none"> <li>• To learn the fundamentals of software defined networks.</li> <li>• To understand the separation of the data plane and the control plane.</li> <li>• To study about the SDN Programming.</li> <li>• To study about the various applications of SDN</li> </ul>	<p>CO1: Examine the challenges and opportunities associated with adopting SDN compared to traditional approaches to networking.</p> <p>CO2: Analyze the functions and components of the SDN architecture.</p> <p>CO3: Discuss the major requirements of the design of an SDN protocol.</p> <p>CO4: Design and create an SDN network consisting of SDN switches and a centralized controller.</p> <p>CO5: Analyze the performance of the SDN network by using verification and troubleshooting techniques.</p>

## Course Outcomes

S. No.	Course Code	Course Title	Course Objective	Expected Outcome
74	BTCSPCC 607C	Ecommerce & ERP	<ul style="list-style-type: none"> <li>• To give student an overview of all aspects of E-Commerce. Topics include development of the Internet and E-Commerce.</li> <li>• To give them awareness about options available for doing business on the Internet, features of Web sites and the tools used to build an E-Commerce web site, marketing issues, payment options, security issues, and customer service.</li> </ul>	CO1: Demonstrate an understanding of the foundations and importance of E-commerce. CO2: Demonstrate an understanding of retailing in E-commerce by: analyzing branding and pricing strategies, using and determining the effectiveness of market research assessing the effects of disintermediation. CO3: Analyze the impact of E-commerce on business models and strategy. CO4: Describe Internet trading relationships including Business to Consumer, Business-to-Business, Intra-organizational.
75	BTCSPCC 608	Digital Image Processing Lab	<ul style="list-style-type: none"> <li>• To work effectively alone or as a member of a small group working on some programming tasks.</li> <li>• To prepare and deliver coherent and structured verbal and written technical reports</li> <li>• To use laboratory equipment effectively.</li> </ul>	CO1: Create and write programs in Matlab language for digital manipulation of images; image acquisition; preprocessing; segmentation; Fourier domain processing; and compression. CO2: Plan and undertake a major individual image processing project. CO3: Working of laboratory equipment effectively
76	BTCSPCC 609	Machine Learning Lab	<ul style="list-style-type: none"> <li>• To Make use of Data sets in implementing the machine learning algorithms</li> <li>• To Analyse and evaluate simple algorithms for pattern classification.</li> <li>• To Implement the machine learning concepts and algorithms in any suitable language of choice.</li> </ul>	CO1: Build intelligent agents for search and games CO2: Solve AI problems through programming with Python CO3: Learning optimization and inference algorithms for model learning CO4: Design and develop programs for an agent to learn and act in a structured environment.
77	BTCSPCC 610	Python Lab	<ul style="list-style-type: none"> <li>• To Describe the need for Object-oriented programming concepts in Python.</li> <li>• To Infer the supported data structures like lists, dictionaries and tuples in Python.</li> <li>• To Illustrate the application of matrices and regular expressions in building the Python programs.</li> <li>• To Discover the use of external modules in creating excel files and navigating the file systems.</li> </ul>	CO1: Create, Test and Debug Python Programs CO2: Implement Conditionals and Loops for Python Programs CO3: Use functions and represent Compound data using Lists, Tuples and Dictionaries CO4: Read and write data from & to files in Python and develop Application using Pygame.

## Course Outcomes

S. No.	Course Code	Course Title	Course Objective	Expected Outcome
78	BTCSPCC 611	Mobile Application Development Lab	<ul style="list-style-type: none"> <li>• To demonstrate the android features and create ,develop using android</li> <li>• To demonstrate and Understanding anatomy of an Android application</li> <li>• To Apply the android geo location based services</li> </ul>	CO1: Demonstrate the android features and create, develop using android CO2: Demonstrate and Understanding anatomy of an Android application CO3: Apply the android geo location based services CO4: Illustrate the android wifi features and advance android development CO5: Demonstrate the linux security and implement ADL interface.
79	BTCSSODE CA 612	Social Outreach, Discipline & Extra Curricular Activities	<ul style="list-style-type: none"> <li>• To allowing students to explore strengths and talents outside of academics.</li> <li>• To helping students develop stronger time-management and organizational skills.</li> <li>• To giving students the opportunity to build friendships and participate in group activities outside of the tight circle of the regular classroom.</li> <li>• To helping to build confidence and self-esteem.</li> </ul>	CO1: Develop their self-confidence, leadership qualities, and their responsibilities towards the community. CO2: Have an impact on academic development, personal development, and civic responsibility CO3: Understand the value of Social Work. CO4: Understand the Significance of Discipline in student's Life CO5: Contribute towards in social up-gradation by social organization like, Art of Living, Yoga etc., Blood donation, Awareness programs, personality development programs.
80	BTCSPCC 701	Internet of Things	<ul style="list-style-type: none"> <li>• To explore to the interconnection and integration of the physical world and the cyber space.</li> <li>• To be able to design &amp; develop IOT Devices.</li> </ul>	CO1: Understand the application areas of IOT CO2: Discuss the revolution of Internet in Mobile Devices, Cloud & Sensor Networks CO3: Understand building blocks of Internet of Things and characteristics.
81	BTCSOE 702A	Principle of Electronic Communication	<ul style="list-style-type: none"> <li>• To Apply the knowledge of statistical theory of communication and explain the conventional digital communication system.</li> <li>• To understand and analyze the signal flow in a digital communication system. To understand concept of spread spectrum communication system.</li> </ul>	CO1: Understand and Gain the knowledge of AM and FM signals CO2: Knowledge about using PAM, PWM, PCM CO3: Understand concept of LAN, PAN CO4: Gain the knowledge about Satellite and Fiber –Optic Cables

## Course Outcomes

S. No.	Course Code	Course Title	Course Objective	Expected Outcome
82	BTC SOE 702B	Micro and Smart System Technology	<ul style="list-style-type: none"> <li>• To Gain knowledge of Smart Materials, Sensors &amp; Actuators, Microsystems.</li> <li>• To Understand the Operation of Smart Devices &amp; Systems, Electronic Circuits &amp; Control for MEMS, Methodology of Micro-manufacturing.</li> </ul>	CO1: Classify micro sensors and actuators and design smart systems. CO2: Understand the role of smart actuators in micro machining. CO3: Construct models of micro systems using conventional modelling techniques CO4: Understand methods for integration of micro and smart systems. CO5: Define the reliability of electronic circuits and control methods used to develop micro and smart systems.
83	BTC SOE 702C	Optimization Techniques	<ul style="list-style-type: none"> <li>• To understand the theory of optimization methods and algorithms developed for solving various types of optimization problems</li> <li>• To develop and promote research interest in applying optimization techniques in problems of Engineering and Technology</li> <li>• To apply the mathematical results and numerical techniques of optimization theory to concrete Engineering problems.</li> </ul>	CO1: Formulate and solve linear Programming Problems CO2: Determine the optimum solution to constrained and unconstrained CO3: Apply dynamic programming principle to Linear programming problems. CO4: Determine the integer solutions to Linear Programming Problems
84	BTC SPCC 703	Internet of Things Lab	<ul style="list-style-type: none"> <li>• To Focus on research – design and development of IoT enabled technologies which are cost effective and socially relevant.</li> <li>• To develop trained manpower (through student projects/research) in the field of IoT based application development.</li> </ul>	CO1: Run and implement different types of commands ls, cd, touch, mv, rm, man, mkdir, rmdir, tar, gzip, cat, more, less, ps, sudo, cron, chown, bchgrp, ping CO2: Understand to run the programs on Pi CO3: Implement the programs using different logics
85	BTC SPCC 704	Cyber Security Lab	<ul style="list-style-type: none"> <li>• To Protect data and respond to threats that occur over the Internet</li> <li>• To Design and implement risk analysis, security policies, and damage assessment</li> </ul>	CO1: Install, configure, use and manage anti malware software on a working network CO2: Review and practice computer and network etiquette and ethics found in working environments CO3: Evaluate best practices in security concepts to maintain confidentiality, integrity and availability of computer systems

## Course Outcomes

S. No.	Course Code	Course Title	Course Objective	Expected Outcome
86	BTCSPSIT 705	Industrial Training	<ul style="list-style-type: none"> <li>• To acquire and apply fundamental principles of engineering.</li> <li>• To identify, formulate and present model problems.</li> <li>• To identify, formulate and model problems and find engineering solution based on a systems approach.</li> </ul>	<p>CO1: Capability to acquire and apply fundamental principles of engineering.</p> <p>CO2: Become master in one's specialized technology</p> <p>CO3: Become updated with all the latest changes in technological world.</p> <p>CO4: Ability to identify, formulate and model problems and find engineering solution based on a systems approach.</p>
87	BTCSPSIT 706	Seminar	<ul style="list-style-type: none"> <li>• To Awareness of how to use values in improving your own professionalism.</li> <li>• To Learning about personal and communication styles for team building.</li> <li>• To identify, formulate and present model problems.</li> <li>• To Learning management of values.</li> </ul>	<p>CO1: Personalize and create a communication style for individual &amp; team building.</p> <p>CO2: Use values in improving one's own professionalism</p> <p>CO3: Develop the higher cognitive abilities that are analysis, synthesis and evaluation.</p> <p>CO4: Ability to identify, formulate and present model problems.</p>
88	BTCSSODE CA 707	Social Outreach, Discipline & Extra Curricular Activities	<ul style="list-style-type: none"> <li>• To allowing students to explore strengths and talents outside of academics.</li> <li>• To helping students develop stronger time-management and organizational skills.</li> <li>• To giving students the opportunity to build friendships and participate in group activities outside of the tight circle of the regular classroom.</li> <li>• To helping to build confidence and self-esteem.</li> </ul>	<p>CO1: Develop their self-confidence, leadership qualities, and their responsibilities towards the community.</p> <p>CO2: Have an impact on academic development, personal development, and civic responsibility</p> <p>CO3: Understand the value of Social Work.</p> <p>CO4: Understand the Significance of Discipline in student's Life</p> <p>CO5: Contribute towards in social up-gradation by social organization like, Art of Living, Yoga etc., Blood donation, Awareness programs, personality development programs.</p>
89	BTCSPCC 801	Big Data Analytics	<ul style="list-style-type: none"> <li>• To provide an overview of an exciting growing field of big data analytics.</li> <li>• To introduce the tools required to manage and analyze big data like Hadoop, NoSql MapReduce.</li> <li>• To teach the fundamental techniques and principles in achieving big data analytics with scalability and streaming capability.</li> <li>• To enable students to have skills that will help them to solve complex real-world problems in for decision support.</li> </ul>	<p>CO1: Understand the key issues in big data management and its associated applications in intelligent business and scientific computing.</p> <p>CO2: Discuss fundamental enabling techniques and scalable algorithms like Hadoop, Map Reduce and NO SQL in big data analytics.</p> <p>CO3: Interpret business models and scientific computing paradigms, and apply software tools for big data analytics.</p> <p>CO4: Interpret adequate perspectives of big data analytics in various applications like recommender systems, social media applications etc.</p>

## Course Outcomes

S. No.	Course Code	Course Title	Course Objective	Expected Outcome
90	BTC SOE 802A	Soft Computing	<ul style="list-style-type: none"> <li>• To conceptualize the working of human brain using ANN.</li> <li>• To become familiar with neural networks that can learn from available examples and generalize to form appropriate rules for inference systems.</li> <li>• To introduce the ideas of fuzzy sets, fuzzy logic and use of heuristics based on human experience.</li> <li>• To provide the mathematical background for carrying out the optimization and familiarizing genetic algorithm for seeking global optimum in self-learning situation.</li> </ul>	<p>CO1: Analyze and appreciate the applications which can use fuzzy logic.</p> <p>CO2: Analyze design inference systems.</p> <p>CO3: Understand the difference between learning and programming and explore practical applications of Neural Networks (NN).</p> <p>CO4: Analyze and appreciate the importance of optimizations and its use in computer engineering fields and other domains.</p> <p>CO5: Understand the efficiency of a hybrid system and how Neural Network and fuzzy logic can be hybridized to form a Neuro-fuzzy network and its various applications.</p>
91	BTC SOE 802B	Robotics and Control	<ul style="list-style-type: none"> <li>• To provide an introductory understanding of robotics.</li> <li>• To a broad range of topics in robotics with emphasis on basics of manipulators, coordinate transformation and kinematics, trajectory planning, control techniques, sensors and devices, robot applications and economics analysis</li> </ul>	<p>CO1: Discuss the history, concepts and key components of robotics technologies.</p> <p>CO2: Describe and compare various robot sensors and their perception principles that enable a robot to analyse their environment, reason and take appropriate actions toward the given goal.</p> <p>CO3: Analyse and solve problems in spatial coordinate representation and spatial transformation, robot locomotion, kinematics, motion control, localization and mapping, navigation and path planning.</p> <p>CO4: Apply and demonstrate the learned knowledge and skills in practical robotics applications.</p> <p>CO5: Plan, design and implement robotic systems, algorithms and software capable of operating in complex and interactive environments.</p>
92	BTC SOE 802C	Simulation Modeling and Analysis	<ul style="list-style-type: none"> <li>• To study modeling, design, simulation, planning, verification and validation.</li> <li>• To learn the simulation techniques, the students are expected to be able to solve real world problems which cannot be solved strictly by mathematical approaches.</li> </ul>	<p>CO1: Create a relevant model for a multitude of problems from science and engineering, by extracting the necessary and relevant information regarding the problem.</p> <p>CO2: Define the different modeling terms by analyzing the system or the data that is present.</p> <p>CO3: Implement the model on the computer and from the results check for the validity of the model and correctness of the assumptions present in the model.</p> <p>CO4: Analyze the outcomes (mostly through visualizations) and make predictions.</p>

## Course Outcomes

S. No.	Course Code	Course Title	Course Objective	Expected Outcome
93	BTCSPCC 803	Big Data Analytics Lab	<ul style="list-style-type: none"> <li>• To introduce the tools required to manage and analyze big data like Hadoop, NoSql Map Reduce.</li> <li>• To teach the fundamental techniques and principles in achieving big data analytics with scalability and streaming capability.</li> <li>• To enable students to have skills that will help them to solve complex real-world problems in for decision support.</li> </ul>	<p>CO1: Understand the key issues in big data management and its associated applications in intelligent business and scientific computing.</p> <p>CO2: Acquire fundamental enabling techniques and scalable algorithms like Hadoop, Map Reduce and NO SQL in big data analytics.</p> <p>CO3: Interpret business models and scientific computing paradigms, and apply software tools for big data analytics.</p> <p>CO4: Apply adequate perspectives of big data analytics in various applications like recommender systems, social media applications etc.</p>
94	BTCSPCC 804	Software Testing and Validation Lab	<ul style="list-style-type: none"> <li>• To study fundamental concepts in software testing, including software testing objectives, process, criteria, strategies, and methods.</li> <li>• To discuss various software testing issues and solutions in software unit test; integration, regression, and system testing.</li> <li>• To learn how to planning a test project, design test cases and data, conduct testing operations, manage software problems and defects, generate a testing report.</li> <li>• To expose the advanced software testing topics, such as object-oriented software testing methods, and component-based software testing issues, challenges, and solutions.</li> <li>• To gain software testing experience by applying software testing knowledge and methods to practice-oriented software testing projects.</li> </ul>	<p>CO1: Apply software testing knowledge and engineering methods.</p> <p>CO2 : Design and conduct a software test process for a software testing project.</p> <p>CO3: Identify the needs of software test automation, and define and develop a test tool to support test automation.</p> <p>CO4: Understand and identify various software testing problems, and solve these problems by designing and selecting software test models, criteria, strategies, and methods.</p> <p>CO5: Understand various communication methods and skills to communicate with their teammates to conduct their practice-oriented software testing projects.</p>

## Course Outcomes

S. No.	Course Code	Course Title	Course Objective	Expected Outcome
95	BTCSPSIT 805	Project	<ul style="list-style-type: none"> <li>• To introduce the concept and methods required for the construction of large software intensive system.</li> <li>• To develop a broad understanding of the discipline of software engineering and management of software system.</li> <li>• To provide an understanding of both theoretical and methodological issues involve in modern software engineering project management and focus strongly on practical techniques.</li> </ul>	<p>CO1: Capability to acquire and apply fundamental principles of engineering.</p> <p>CO2: Be a multi-skilled engineer with good technical knowledge, management, leadership and entrepreneurship skills.</p> <p>CO3: Identify, formulate and model problems and find engineering solution based on a systems approach.</p> <p>CO4: Capability and enthusiasm for self-improvement through continuous professional development and life-long learning.</p>
96	BTCSSODE CA 806	Social Outreach, Discipline & Extra Curricular Activities	<ul style="list-style-type: none"> <li>• To allowing students to explore strengths and talents outside of academics.</li> <li>• To helping students develop stronger time-management and organizational skills.</li> <li>• To giving students the opportunity to build friendships and participate in group activities outside of the tight circle of the regular classroom.</li> <li>• To helping to build confidence and self-esteem.</li> </ul>	<p>CO1: Develop their self-confidence, leadership qualities, and their responsibilities towards the community.</p> <p>CO2: Have an impact on academic development, personal development, and civic responsibility</p> <p>CO3: Understand the value of Social Work.</p> <p>CO4: Understand the Significance of Discipline in student's Life</p> <p>CO5: Contribute towards in social up-gradation by social organization like, Art of Living, Yoga etc., Blood donation, Awareness programs, personality development programs.</p>
97	BTBSC 101	Engineering Mathematics-I	<ul style="list-style-type: none"> <li>• To familiarize the prospective engineers with techniques in calculus, multivariate analysis and linear algebra.</li> <li>• To equip the students with standard concepts and tools at an intermediate to advanced level</li> <li>• To understand Fourier series representation of Periodic signals and to introduce with Fourier Series.</li> </ul>	<p>CO1: Understand the calculation and Applications of definite integrals.</p> <p>CO2: Solve problems related to Sequences and Series.</p> <p>CO3: Interpret the concept of s series as the sum of a sequence and able to solve problems related to Fourier series.</p> <p>CO4: Interpret the concept of s series as the sum of a sequence and use the sequence of partial sums to determine divergence of a series.</p> <p>CO5: Understand the calculation and Applications of Multivariable integrals.</p>

## Course Outcomes

S. No.	Course Code	Course Title	Course Objective	Expected Outcome
98	BTBSC 102	Engineering Physics	<ul style="list-style-type: none"> <li>• To understand the concepts of interference, Diffraction and Polarization.</li> <li>• To know about wave particle duality.</li> <li>• To know applications of Optical fibre.</li> <li>• To know applications of Lasers in Science, engineering and medicine.</li> <li>• To know classification of Solid.</li> </ul>	<p>CO1: Enhance the basic skills required to understand, develop, and design various engineering applications involving Wave Optics.</p> <p>CO2: Understand Quantum Mechanics and apply them to diverse engineering problems.</p> <p>CO3: Analyze the nature of light propagation in guided medium for engineering applications and study in Coherence and Optical Fibers.</p> <p>CO4: Describe different Laser problems.</p> <p>CO5: Describe Material Science &amp; Semiconductor Physics.</p>
99	BTHSMC 103	Communication Skills	<ul style="list-style-type: none"> <li>• To improve communication skills with Basic English.</li> <li>• To know different types of communication.</li> <li>• To develop basic skills needed for writing short stories and poems.</li> </ul>	<p>CO1: Understand Communication and Types of Communication.</p> <p>CO2: Know Grammar of Passive Voice, Reported Speech.</p> <p>CO3: Understand different ways of writing Job Application and Curriculum-Vitae.</p> <p>CO4: Describe different Short Stories for effective Learning.</p> <p>CO5: Describe different poems for improving communication skills.</p>
100	BTESC 104	Programming for Problem Solving	<ul style="list-style-type: none"> <li>• To learn the fundamentals of computers.</li> <li>• To understand the various steps in program development.</li> <li>• To learn the syntax and semantics of C programming language.</li> <li>• To learn the usage of structured programming approach in solving problems.</li> </ul>	<p>CO1: Know and understand the conventions of Fundamentals of Computer.</p> <p>CO2: Represent algorithms through flowchart and pseudo code.</p> <p>CO3: Learn Number system and apply these skills in developing new products.</p> <p>CO4: Understand and learn C Programming.</p> <p>CO5: Comprehend the Development of C programs using- Arrays, functions.</p>
101	BTESC 105A	Basic Electrical Engineering	<ul style="list-style-type: none"> <li>• To Understand the basic concept of Electrical engineering instruments for engineering applications.</li> <li>• To Understand the basic electrical engineering parameters and their importance.</li> <li>• To Understand the concept of various laws and principles associated with electrical systems.</li> <li>• To Develop the knowledge to apply concepts in the field of electrical engineering, projects and research.</li> </ul>	<p>CO1: Apply basic skills for designing various instruments for engineering applications.</p> <p>CO2: Determine error in laboratory measurements and techniques used to minimize such error.</p> <p>CO3: Gain knowledge regarding the various laws and principles associated with electrical systems.</p> <p>CO4: Understand electrical machines and apply them for practical problems.</p> <p>CO5: Understand the concepts in the field of electrical engineering, projects and research.</p>

## Course Outcomes

S. No.	Course Code	Course Title	Course Objective	Expected Outcome
102	BTESC 105B	Basic Civil Engineering	<ul style="list-style-type: none"> <li>• To inculcate the essentials of Civil Engineering field to the students of all branches of Engineering.</li> <li>• To provide students the significance of the Civil Engineering Profession in satisfying societal needs.</li> </ul>	CO1: Illustrate the fundamental aspects of Civil Engineering. CO2: Understand the scope of civil engineering. CO3: Explain the concepts of surveying for making horizontal and vertical measurements. CO4: Describe plan and set out of a building, also illustrate the uses of various building materials and explains the method of construction of different components of a building. CO5: Understand the modes of Traffic and Road Safety and Road Safety Measures
103	BTBSC 106	Engineering Physics Lab	<ul style="list-style-type: none"> <li>• To understand the concepts of interference.</li> <li>• To know about wavelength of light.</li> <li>• To know about depletion layer and band gap of semiconductor.</li> <li>• To know dispersion of light through prism.</li> <li>• To know principle of Hall Effect.</li> </ul>	CO1: Understand the usage of common Ammeter, voltmeter and Multimeter. CO2: Formulate and solve complex AC, DC circuits. CO3: Understand the usage of common electrical measuring instruments. CO4: Identify the type of electrical machine used for that particular application. CO5: Understand the usage of optical instruments.
104	BTHSMC 107	Language Lab	<ul style="list-style-type: none"> <li>• To understand concepts of basic English language fundamentals.</li> <li>• To understand the communication skills.</li> <li>• To develop Dialogue Writing and Listening comprehension.</li> </ul>	CO1: Understand the Phonetic Symbols and Transcriptions. CO2: Understand the skills required in Extempore. CO3: Improve their communication skills for Group Discussion. CO4: Improve their technical communication skills. CO5: Understand Dialogue Writing and Listening skills.
105	BTESC 108	Computer Programming Lab	<ul style="list-style-type: none"> <li>• To understand the various steps in program development.</li> <li>• To learn the syntax and semantics of C programming language.</li> <li>• To learn the usage of structured programming approach in solving problems.</li> </ul>	CO1: Learn about the C Library, Preprocessor directive, Input-output statement. CO2: Learn data type, variables, and conditional statement. CO3: Learn about array and string operations. CO4: Understand File handling operations. CO5: Learn programs related to C Programming and apply them to solve real world problems.
106	BTESC109A	Basic Electrical Engineering Lab	<ul style="list-style-type: none"> <li>• To understand training on different trades like Fitting, Carpentry and Casting</li> <li>• To learn various joints are made using wood and other metal pieces.</li> <li>• To develop machining skills in students.</li> </ul>	CO1. Adapt knowledge regarding the various laws and principles associated with electrical systems. CO2: Adapt knowledge regarding electrical machines and apply them for practical problems. CO3: Understand various types' Electrical Equipments. CO4: Understanding digital measuring equipments.

## Course Outcomes

S. No.	Course Code	Course Title	Course Objective	Expected Outcome
107	BTESC109B	Basic Civil Engineering Lab	<ul style="list-style-type: none"> <li>• To Introduce The Various Activities Regarding Measurement And Leveling</li> <li>• To Water Supply Procedure And Various Discharge And Pressure Measuring Apparatuses</li> </ul>	CO1: Conduct survey and collect field data. CO2: Review field notes from survey data. CO3: Interpret survey data and compute areas and volumes. CO4: Describe Total station and measurement CO5: Describe various water fittings and find out the various fluids properties
108	BTESC 110	Computer Aided Engineering Graphics	<ul style="list-style-type: none"> <li>• To Increase ability to communicate with people</li> <li>• To Learn to sketch and take object dimensions.</li> <li>• To Learn to take data and transform it into graphic drawings.</li> </ul>	CO1: Know and understand the conventions and the method of engineering drawing. CO2: Interpret engineering drawings using fundamentals of different views to construct basic and intermediate geometry. CO3: Know the Theory of sectioning and Section of Solids. CO4: Comprehend the theory of projection. CO5: Improve their drawing skill in the form of Computer Graphics.
109	BTSODECA111	Discipline	<ul style="list-style-type: none"> <li>• To allowing students to explore strengths and talents outside of academics.</li> <li>• To helping students develop stronger time-management and organizational skills.</li> <li>• To giving students the opportunity to build friendships and participate in group activities outside of the tight circle of the regular classroom.</li> <li>• To helping to build confidence and self-esteem.</li> </ul>	CO1: Develop their self-confidence, leadership qualities, and their responsibilities towards the community. CO2: Have an impact on academic development, personal development, and civic responsibility CO3: Understand the value of Social Work. CO4: Understand the Significance of Discipline in student's Life CO5: Contribute towards in social up-gradation by social organization like, Art of Living, Yoga etc., Blood donation, Awareness programs, personality development programs.
110	BTBSC 201	Engineering Mathematics-II	<ul style="list-style-type: none"> <li>• To provide detailed of matrices which is applied for solving system of linear equations and useful in various fields of technology.</li> <li>• To understand the course is an introduction to ordinary differential equations.</li> <li>• To understand the collection of methods and techniques used to find solutions to several types of differential equations, including first order scalar equations.</li> </ul>	CO1: Understand the matrices, Rank of a matrix, rank-nullity theorem; System of linear equations. CO2: Identify, analyze and subsequently solve physical situations whose behavior can be described by First order and First degree ordinary differential. CO3: Determine solutions to second order linear differential equations with variable coefficients. CO4: Solve Engineering problems using different methods and techniques. CO5: Evaluate the first order and Second order partial differential equations

## Course Outcomes

S. No.	Course Code	Course Title	Course Objective	Expected Outcome
111	BTBSC 202	Engineering Chemistry	<ul style="list-style-type: none"> <li>• To acquire the knowledge about impurities in water, their determination and purification.</li> <li>• To learn about different types of fuel and lubricant and their applications.</li> <li>• To gain the basic knowledge, applications and control methods of corrosion.</li> <li>• To get the knowledge of preparation and significance of explosives, cement, refractories and glass.</li> <li>• To get the knowledge of organic reaction mechanism and their uses with different types of drugs</li> </ul>	<p>CO1: gain knowledge about impurities in water, their determination and purification.</p> <p>CO2: understand organic fuels and various emerging new areas of organic chemistry.</p> <p>CO3: learn about Corrosion and its control.</p> <p>CO4: Get knowledge about the chemistry of some Engineering Materials like Portland Cement.</p> <p>CO5: understand and study Organic reaction mechanisms.</p>
112	BTHSMC 203	Human Values	<ul style="list-style-type: none"> <li>• To Know the basic guidelines, content and Process for Value Education</li> <li>• To develop understanding different Harmony concept.</li> <li>• To understand professional ethics and natural acceptance of human values.</li> </ul>	<p>CO1: Understand and analyze Basic Guidelines, Content and Process for Value Education.</p> <p>CO2: Understand Harmony in the Human Being - Harmony in Myself.</p> <p>CO3: Understand Harmony in the Family and Society- Harmony in Human-Human Relationship.</p> <p>CO4: Understand Harmony in the Nature and Existence – Whole existence as Coexistence.</p> <p>CO5: Understand of Harmony on Professional Ethics. Natural acceptance of human values.</p>
113	BTESC 204	Basic Mechanical Engineering	<ul style="list-style-type: none"> <li>• To Increase ability to understand machine working</li> <li>• To Learn to understand fundamentals of mechanical systems</li> <li>• To Learn to make different mechanical aspects of engineering</li> </ul>	<p>CO1: Know and understand the Fundamentals of thermal engineering, mechanical machine design, industrial engineering and manufacturing technology.</p> <p>CO2: Understand the Refrigeration and Air Conditioning.</p> <p>CO3: Understand the Applications and working of Reciprocating and Centrifugal pumps.</p> <p>CO4: Know the Transmission of Power through Belt and Rope Drives, Gears.</p> <p>CO5: Understand of Primary Manufacturing Processes.</p>

## Course Outcomes

S. No.	Course Code	Course Title	Course Objective	Expected Outcome
114	BTESC205A	Basic Civil Engineering	<ul style="list-style-type: none"> <li>• To inculcate the essentials of Civil Engineering field to the students of all branches of Engineering.</li> <li>• To provide students the significance of the Civil Engineering Profession in satisfying societal needs.</li> </ul>	CO1: Illustrate the fundamental aspects of Civil Engineering. CO2: Understand the scope of civil engineering. CO3: Explain the concepts of surveying for making horizontal and vertical measurements. CO4: Describe plan and set out of a building, also illustrate the uses of various building materials and explains the method of construction of different components of a building. CO5: Understand the modes of Traffic and Road Safety and Road Safety Measures
115	BTESC205B	Basic Electrical Engineering	<ul style="list-style-type: none"> <li>• To Understand the basic concept of Electrical engineering instruments for engineering applications.</li> <li>• To Understand the basic electrical engineering parameters and their importance.</li> <li>• To Understand the concept of various laws and principles associated with electrical systems.</li> <li>• To Develop the knowledge to apply concepts in the field of electrical engineering, projects and research.</li> </ul>	CO1: Apply basic skills for designing various instruments for engineering applications. CO2: Determine error in laboratory measurements and techniques used to minimize such error. CO3: Gain knowledge regarding the various laws and principles associated with electrical systems. CO4: Understand electrical machines and apply them for practical problems. CO5: Understand the concepts in the field of electrical engineering, projects and research.
116	BTHSMC 206	Advanced English	<ul style="list-style-type: none"> <li>• To Develop basic communication concept for social environment.</li> <li>• To Improve conversation skills to increase confidence and proficiency.</li> <li>• To understand the concept of English in 'real life' situations.</li> <li>• To apply grammar knowledge for growing according to environment.</li> </ul>	CO 1: Understand Communicate in a variety of social, travel and work-related situations CO 2: Understand conversation skills and Widen vocabulary skills CO 3: Apply proficiency in all major skills CO 4: Apply Practice English in 'real life' situations CO 5: Learn how to apply grammar knowledge
117	BTBSC 207	Engineering Chemistry Lab	<ul style="list-style-type: none"> <li>• To understand the method for the determination of hardness in water and purification process.</li> <li>• To understand about different types of volumetric analysis.</li> <li>• To learn about properties of lubricant oil.</li> <li>• To Synthesize a small drug molecule and analyse a salt sample</li> </ul>	CO1: Understand the method for the determination of hardness in water and purification process. CO2: understand about different types of volumetric analysis. CO3: learn about properties of lubricant oil. CO4: Synthesize a small drug molecule and analyse a salt sample

## Course Outcomes

S. No.	Course Code	Course Title	Course Objective	Expected Outcome
118	BTHSMC 208	Human Values Activities	<ul style="list-style-type: none"> <li>• To Understand the basic guidelines, content and process for value education.</li> <li>• To develop understanding different Harmony concept.</li> <li>• To understand professional ethics and natural acceptance of human values.</li> </ul>	<p>CO1: Analyze Basic Guidelines, Content and Process for Value Education.</p> <p>CO2: Understanding Harmony in the Human Being - Harmony in Myself.</p> <p>CO3: Understand Harmony in the Family and Society- Harmony in Human-Human Relationship. Recollect and narrate an incident in your life.</p> <p>CO4: Understand Harmony in the Nature and Existence – Whole existence as Coexistence. Summarize the core message of this course grasped by you.</p> <p>CO5: List and Implicate the above Holistic Understanding of Harmony on Professional Ethics. Natural acceptance of human values.</p>
119	BTESC 209	Manufacturing Practices Workshop	<ul style="list-style-type: none"> <li>• To discuss the modules include training on different trades like Fitting, Carpentry and Casting</li> <li>• To learn various joints are made using wood and other metal pieces.</li> <li>• To develop machining skills in students.</li> </ul>	<p>CO1: Describe cast different parts through Carpentry.</p> <p>CO2: Define control manufacturing via computers.</p> <p>CO3: Understanding use power tools and fitting tools.</p> <p>CO4: Knowledge of various welding operations</p> <p>CO5: Understanding different metallic and non-metallic objects.</p>
120	BTESC210A	Basic Civil Engineering Lab	<ul style="list-style-type: none"> <li>• To Introduce The Various Activities Regarding Measurement And Leveling</li> <li>• To Water Supply Procedure And Various Discharge And Pressure Measuring Apparatuses</li> </ul>	<p>CO1: Conduct survey and collect field data.</p> <p>CO2: Review field notes from survey data.</p> <p>CO3: Interpret survey data and compute areas and volumes.</p> <p>CO4: Describe Total station and measurement</p> <p>CO5: Describe various water fittings and find out the various fluids properties</p>
121	BTESC 210B	Basic Electrical Engineering Lab	<ul style="list-style-type: none"> <li>• To understand training on different trades like Fitting, Carpentry and Casting</li> <li>• To learn various joints are made using wood and other metal pieces.</li> <li>• To develop machining skills in students.</li> </ul>	<p>CO1. Adapt knowledge regarding the various laws and principles associated with electrical systems.</p> <p>CO2: Adapt knowledge regarding electrical machines and apply them for practical problems.</p> <p>CO3: Understand various types' Electrical Equipments.</p> <p>CO4: Understanding digital measuring equipments.</p>

## Course Outcomes

S. No.	Course Code	Course Title	Course Objective	Expected Outcome
122	BTESC 211	Computer Aided Machine Drawing	<ul style="list-style-type: none"> <li>• To design, develop and analyze simple linear and non linear computer based drawing.</li> <li>• To identify and apply the suitable knowledge of computers to understand the shape and size of Drawing Objects.</li> </ul>	CO1: Understand the conventions and the method of engineering drawing. CO2: Interpret engineering drawings using fundamentals of different views to construct basic and intermediate geometry. CO3: Adapt theory of sectioning and Section of Solids. CO4: Classify the theory of projection. CO5: Understand drawing skill in the form of Computer Graphics.
123	BTSODECA212	Social Outreach, Discipline & Extra Curricular Activities	<ul style="list-style-type: none"> <li>• To allowing students to explore strengths and talents outside of academics.</li> <li>• To helping students develop stronger time-management and organizational skills.</li> <li>• To giving students the opportunity to build friendships and participate in group activities outside of the tight circle of the regular classroom.</li> <li>• To helping to build confidence and self-esteem.</li> </ul>	CO1: Develop their self-confidence, leadership qualities, and their responsibilities towards the community. CO2: Have an impact on academic development, personal development, and civic responsibility CO3: Understand the value of Social Work. CO4: Understand the Significance of Discipline in student's Life CO5: Contribute towards in social up-gradation by social organization like, Art of Living, Yoga etc., Blood donation, Awareness programs, personality development programs.
124	BTCEBSC 301	Advance Engineering Mathematics -I	<ul style="list-style-type: none"> <li>• To Solve probability problems and the transformation.</li> <li>• To Differentiate and integrate standard functions of several variables</li> <li>• To Define and calculate selected quantities in vector calculus</li> <li>• To Formulate and solve engineering optimization problems</li> <li>• To Solve second order ordinary differential equations with constant coefficients</li> </ul>	CO1: Apply the fundamental concepts of Ordinary Differential Equations and Partial Differential Equations and the basic numerical methods for their resolution. CO2: Solve the problems choosing the most suitable method. CO3: Understand the difficulty of solving problems analytically and the need to use numerical approximations for their resolution. CO4: Use computational tools to solve problems and applications of Ordinary Differential Equations and Partial Differential Equations. CO5: Compute differential equation problems in the field of Industrial Organisation Engineering.

## Course Outcomes

S. No.	Course Code	Course Title	Course Objective	Expected Outcome
125	BTCEHSMC 302	Technical Communication / Managerial Economics & Financial Accounting	<ul style="list-style-type: none"> <li>• To understand the characteristics of technical writing</li> <li>• To understand complex engineering ideas for targeted audiences.</li> <li>• To understand the advance technical writing in professional documents.</li> <li>• To write effective technical and business documents that are grammatically and stylistically correct</li>   <li>• To discuss the economic concepts, theories, tools, and methodologies to solve practical problems in a business.</li> <li>• To provide the student with basic understanding of financial accounting that can be used in decision making techniques.</li> </ul>	<p>CO1: Understand basic communication skills used in technical areas.</p> <p>CO2: Understand technical materials, texts and information design &amp; development.</p> <p>CO3: Adapt an effective oral presentation, displaying the ability to engage the audience by employing a suitable delivery style, appropriate language and quality visual aids.</p> <p>CO4: Interpret Technical Reports and its types &amp; features</p> <p>CO5: Understand the structure and formats of technical articles and proposals.</p> <p>CO1: Understand the conceptual knowledge of accounting</p> <p>CO2: Sharpen the analytical skills through integrating their knowledge of economic theories with decision making techniques.</p> <p>CO3: Analyze different market structures and pricing theories.</p> <p>CO4: Discuss the accounting process and preparation of final accounts of sole trader</p> <p>CO5: Understand the mechanism of demand and supply.</p>
126	BTCEESC 303	Engineering Mechanics	<ul style="list-style-type: none"> <li>• To get the knowledge of Dynamic Equilibrium of particles and rigid bodies.</li> <li>• To understand the effect of friction, kinematics, kinetics of particle and rigid body, related principles.</li> <li>• To implant the above knowledge to solve the practical problems.</li> </ul>	<p>CO1: Understand the types of forces and their applications.</p> <p>CO2: Understand the concept of centre of gravity.</p> <p>CO3: Get the Knowledge of types of friction.</p> <p>CO4: Understand the fundamental principles and concept of Newton's law of motion.</p> <p>CO5: Get the knowledge of work, power and energy.</p>

## Course Outcomes

S. No.	Course Code	Course Title	Course Objective	Expected Outcome
127	BTCEPCC 304	Surveying	<ul style="list-style-type: none"> <li>• To prepare the student to plan and conduct field work and application of scientific methodology in handling field samples by using machine.</li> <li>• To know the art, science and technology of cartography and applications of GIS in Mapping Resources. .</li> <li>• To develop the skills in surveying and thematic mapping.</li> </ul>	<p>CO1: Solve the mathematical problems using algebraic and trigonometric functions.</p> <p>CO2: Analyze the projects using visualization and current industry methods.</p> <p>CO3: Demonstrate the fundamental knowledge of the systems and processes used to construct the built environment.</p> <p>CO4: Perform the basic land surveying instruments and related calculations. Perform the basic concepts of highway design and subdivision design.</p> <p>CO5: Practice the professional and ethical responsibilities of the profession.</p>
128	BTCEPCC 305	Fluid Mechanics	<ul style="list-style-type: none"> <li>• To get the fundamental knowledge of fluid, its properties and behavior under various conditions of internal and external flows.</li> <li>• To develop the understanding of hydrostatic law, principle of buoyancy and stability of a floating body and application of mass, momentum and energy equation in fluid flow</li> <li>• To know the fundamentals of stagnant, flowing fluid and flow through different conduits.</li> <li>• To develop the steady state mechanical energy balance equation for fluid flow systems, estimate pressure drop in fluid flow systems and determine performance characteristics of fluid machinery.</li> </ul>	<p>CO1: Understand the stress-strain relationship in fluids, classify their behaviour and also establish force balance in static systems.</p> <p>CO2: Apply Bernouli's principle and compute pressure drop in flow systems of different configurations.</p> <p>CO3: Compute power requirement in fixed bed system and determine minimum fluidization velocity in fluidized bed .</p> <p>CO4: Describe function of flow metering devices and apply Bernoulli equation to determine the performance of flow-metering devices.</p> <p>CO5: Determine and analyze the performance aspects of fluid machinery specifically for centrifugal pump and reciprocating pump.</p>
129	BTCEPCC 306	Building Materials and construction	<ul style="list-style-type: none"> <li>• To know the properties of wood, cement, admixtures used for buildings and construction process.</li> <li>• To develop the building walls, foundations, form work and finishing work.</li> <li>• To know the building arches, roofs, doors, windows and ventilators and how they are provided for buildings.</li> <li>• To explain the material which we want to use and how we want to use and how to give a good building for ma using purpose.</li> </ul>	<p>CO1: Know about different materials such as stones, bricks, Tiles, wood, aluminum, glass &amp; paints and their classification , manufacture and structural requirements</p> <p>CO 2: Know about the materials used in making of concrete such as cement and admixtures.</p> <p>CO3: Know about tests on cement such as field and lab tests and uses of cement and admixtures.</p> <p>CO4: Understand various building components such as lintels, arches, types of roofs and joinery such as doors, windows and the materials used in making.</p> <p>CO5: Demonstrate various building services such as plumbing services, sanitary and ventilations.</p>

## Course Outcomes

S. No.	Course Code	Course Title	Course Objective	Expected Outcome
130	BTCEPCC 307	Engineering Geology	<ul style="list-style-type: none"> <li>• To study and identify different types natural materials like rocks &amp; minerals and soil.</li> <li>• To understand the various natural dynamic processes their influence on the surfacial features, natural material and their consequences.</li> <li>• To know the Geological structures (Joint, veins, crack, faults, and fold), reasons of formation for each type and their side effects on the engineering projects.</li> <li>• To know the Sedimentary processes (Weathering, erosion, deposition), Metamorphism and volcanic eruptions.</li> <li>• To identify the minerals types of clay minerals their properties and effects on engineering project.</li> </ul>	<p>CO1: Understand issues concerning the geological basement and structure of a region</p> <p>CO2: Distinguish the characteristics of the most important geological formations and problems that may arise in the various public works.</p> <p>CO3: Describe and interpret the geological structures in the geological maps and cross sections.</p> <p>CO4: Assess and appropriately adjust the results of geological study in order to secure construction and operation of a technical project.</p> <p>CO5: Analyze and evaluate data and appropriately solve problems both technical and environmental.</p>
131	BTCEPCC 308	Surveying Lab	<ul style="list-style-type: none"> <li>• To determine the relative position of any objects or points of the earth.</li> <li>• To determine the distance and angle between different objects.</li> <li>• To prepare a map or plan to represent an area on a horizontal plan.</li> <li>• To develop methods through the knowledge of modern science and the technology and use them in the field.</li> <li>• To solve measurement problems in an optimal way.</li> </ul>	<p>CO1: Analyze a topographical map which shows the hills, valleys, rivers, villages, towns, forests, etc. of a country.</p> <p>CO2: Analyze a cadastral map showing the boundaries of fields, houses and other properties.</p> <p>CO3: Study an engineering map which shows the details of engineering works such as roads, railways, reservoirs, irrigation canals, etc.</p> <p>CO4: Understand a military map showing the road and railway communications with different parts of a country. Such a map also shows the different strategic points important for the defense of a country.</p> <p>CO5: Analyze a contour map to determine the capacity of a reservoir and to find the best possible route for roads, railways, etc.</p>
132	BTCEPCC 309	Fluid Mechanics Lab	<ul style="list-style-type: none"> <li>• To know the concept of fluid mechanics and hydraulic machines.</li> <li>• To demonstrate the classical experiments in fluid mechanics and hydraulic machinery.</li> <li>• To correlate various flow measuring devices such as Venturimeter, orifice meter and notches etc.</li> <li>• To discuss the performance and characteristics of turbines and pumps.</li> </ul>	<p>CO1: Understand the basic physics of fluids.</p> <p>CO2: Calculate and design engineering applications involving fluid.</p> <p>CO3: Understand and analyze the flow systems in terms of mass, momentum, and energy balance.</p> <p>CO4: Know the current research topics of fluid mechanics.</p>

## Course Outcomes

S. No.	Course Code	Course Title	Course Objective	Expected Outcome
133	BTCEPCC 310	Computer Aided Civil Engineering Drawing	<ul style="list-style-type: none"> <li>• To know the basic concepts and the use of engineering drawing in the design and manufacturing field.</li> <li>• To acquire the basic knowledge and skills in engineering drawings and the capability to read and interpret blue prints for manufacturing.</li> <li>• To develop an understanding of 2D and 3D computer aided drafting with the requirements of good engineering drawings and be able to apply them to their work.</li> </ul>	<p>CO1: Analyze the technical drawings using both CAD and basic manual tools.</p> <p>CO2: Create the mechanical parts for different applications.</p> <p>CO3: Apply the stages of the design process from scratch using engineering graphics techniques such as sectional projections, dimensioning and computer-generated drawings (2D). Apply principles of technical drawings to create different 3D models.</p> <p>CO4: Utilize the Solid Works surfacing features and methods to create complex solid geometry.</p> <p>CO5: Produce the structural drawing of Reinforced Concrete Elements such as Beams, Slabs , Develop Structural Drawings of steel elements such as Connections, Tension Members, Compression Members, Beams, Column Base, and Roof Trusses. , Understand various connection details.</p>
134	BTCEPCC311	Civil Engineering Materials Lab	<ul style="list-style-type: none"> <li>• To investigate the properties and behavior of materials and assemblies.</li> <li>• To familiarize with ASTM specifications and testing procedures and with construction field monitoring and testing practices.</li> <li>• To develop the skills for analyzing experimental data and working in teams.</li> <li>• To design and conduct a custom laboratory experiment,</li> <li>• To analyze and interpret the data, and make a presentation on the results of the testing</li> </ul>	<p>CO1: Reproduce the basic knowledge of mathematics and engineering in finding the strength in tension, compression, shear and torsion</p> <p>CO2: Identify, formulate and solve engineering problems of structural elements subjected to flexure</p> <p>CO3: Evaluate the impact of engineering solutions on the society and also will be aware of contemporary issues regarding failure of structures due to unsuitable materials</p> <p>CO4: Learn different properties of materials used I n Civil Engineering.</p>
135	BTCEPCC312	Geology Lab	<ul style="list-style-type: none"> <li>• To acquire practical Knowledge on geology and on various types of rocks and minerals.</li> </ul>	<p>CO1: Categorize rocks and minerals by their origin and engineering properties.</p> <p>CO2: Apply geological principles to rock masses and discontinuities for use in engineering design e.g. rock slopes, foundation.</p> <p>CO3: Identify minerals and rocks</p> <p>CO4: Get the knowledge of strike and dip of the bedding planes.</p> <p>CO5: Interpret geological maps.</p>

## Course Outcomes

S. No.	Course Code	Course Title	Course Objective	Expected Outcome
136	BTCEPSIT 313	Industrial Training	<ul style="list-style-type: none"> <li>• To acquire and apply fundamental principles of engineering.</li> <li>• To identify, formulate and present model problems.</li> <li>• To identify, formulate and model problems and find engineering solution based on a systems approach.</li> </ul>	<p>CO1: Capability to acquire and apply fundamental principles of engineering.</p> <p>CO2: Become master in one's specialized technology</p> <p>CO3: Become updated with all the latest changes in technological world.</p> <p>CO4: Ability to identify, formulate and model problems and find engineering solution based on a systems approach.</p>
137	BTCESODECA 314	Social Outreach, Discipline & Extra	<ul style="list-style-type: none"> <li>• To allowing students to explore strengths and talents outside of academics.</li> <li>• To helping students develop stronger time-management and organizational skills.</li> <li>• To giving students the opportunity to build friendships and participate in group activities outside of the tight circle of the regular classroom.</li> <li>• To helping to build confidence and self-esteem.</li> </ul>	<p>CO1: Develop their self-confidence, leadership qualities, and their responsibilities towards the community.</p> <p>CO2: Have an impact on academic development, personal development, and civic responsibility</p> <p>CO3: Understand the value of Social Work.</p> <p>CO4: Understand the Significance of Discipline in student's Life</p> <p>CO5: Contribute towards in social up-gradation by social organization like, Art of Living, Yoga etc., Blood donation, Awareness programs, personality development programs.</p>
138	BTCEBSC401	Advance Engineering Mathematics-II	<ul style="list-style-type: none"> <li>• To provide the students with sufficient exposure to advanced mathematical methods and tools that are relevant to theoretical and mathematical aspects of Civil engineering research.</li> <li>• To develop the understanding of the mathematical and logical basis to many modern techniques in information technology like machine learning, programming language design, and concurrency.</li> </ul>	<p>CO1: Apply statistical analysis of a variety of experimental and observational studies.</p> <p>CO2: Solve statistical problems using computational tools.</p> <p>CO3: Derive mathematical models of physical systems.</p> <p>CO4: Solve differential equations using appropriate methods.</p> <p>CO5: Present mathematical solutions in a concise and informative manner.</p>

## Course Outcomes

S. No.	Course Code	Course Title	Course Objective	Expected Outcome
139	BTCEHSMC402	Managerial Economics & Financial Accounting/  Technical Communication	<ul style="list-style-type: none"> <li>• To discuss the economic concepts, theories, tools, and methodologies to solve practical problems in a business.</li> <li>• To provide the student with basic understanding of financial accounting that can be used in decision making techniques.</li>   <li>• To understand the characteristics of technical writing</li> <li>• To understand complex engineering ideas for targeted audiences.</li> <li>• To understand the advance technical writing in professional documents.</li> <li>• To write effective technical and business documents that are grammatically and stylistically correct</li> </ul>	<p>CO1: Understand the conceptual knowledge of accounting</p> <p>CO2: Sharpen the analytical skills through integrating their knowledge of economic theories with decision making techniques.</p> <p>CO3: Analyze different market structures and pricing theories.</p> <p>CO4: Discuss the accounting process and preparation of final accounts of sole trader</p> <p>CO5: Understand the mechanism of demand and supply.</p> <p>CO1: Understand basic communication skills used in technical areas.</p> <p>CO2: Understand technical materials, texts and information design &amp; development.</p> <p>CO3: Adapt an effective oral presentation, displaying the ability to engage the audience by employing a suitable delivery style, appropriate language and quality visual aids.</p> <p>CO4: Interpret Technical Reports and its types &amp; features</p> <p>CO5: Understand the structure and formats of technical articles and proposals.</p>
140	BTCEPCC403	Basic Electronics for Civil Engineering Applications	<ul style="list-style-type: none"> <li>• To understand operation of semiconductor devices.</li> <li>• To understand DC analysis and AC models of semiconductor devices.</li> <li>• To apply concepts for the design of Regulators and Amplifiers</li> <li>• To verify the theoretical concepts through laboratory and simulation experiments.</li> <li>• To implement mini projects based on concept of electronics circuit concepts.</li> </ul>	<p>CO1: Comprehend the fundamentals of construction of the semiconducting materials, fabrication of elements working principles and operation of semiconductors.</p> <p>CO2: Analyze the concept with the working principles of forward and reverse bias characteristics.</p> <p>CO3: Know the basic skills in design and analysis of the filters circuits, biasing circuits. Discriminate the principle, construction and operation BJTs, FETs</p> <p>CO4: Interpret the different techniques for FET circuit designs.</p>

## Course Outcomes

S. No.	Course Code	Course Title	Course Objective	Expected Outcome
141	BTCEPCC404	Strength of Materials	<ul style="list-style-type: none"> <li>• To establish an understanding of the fundamental concepts of mechanics of deformable solids; including static equilibrium, geometry of deformation, and material constitutive behavior.</li> <li>• To provide students with exposure to the systematic methods for solving engineering problems in solid mechanics.</li> <li>• To discuss the basic mechanical principles underlying modern approaches for design of various types of structural members subjected to axial load, torsion, bending, transverse shear, and combined loading.</li> <li>• To build the necessary theoretical background for further structural analysis and design courses.</li> </ul>	CO1: Understand the basics of material properties, stress and strain. CO2: Apply knowledge of mathematics, science, for engineering applications CO3: Identify, formulate, and solve engineering & real life problems CO4: Design and conduct experiments, as well as to analyze and interpret data CO5: Design a component to meet desired needs within realistic constraints of safety.
142	BTCEPCC405	Hydraulics Engineering	<ul style="list-style-type: none"> <li>• To share the knowledge regarding the different hydraulic machines and the various types of flows and factors, parameters affecting flow in channels.</li> <li>• To learn about the Non-Uniform flow in Open Channel.</li> <li>• To gain the knowledge Mobile Bed Channel Hydraulics.</li> <li>• To share the knowledge Hydraulic Jump, Surges, Water Waves.</li> <li>• To study about Hydraulic Turbines</li> </ul>	CO1: Discuss the behavior of the water supply system in Melbourne & Identify properties of fluids CO2: Define pressure in static and flowing fluids & the control volume approach and continuity equation CO3: Calculate velocity and pressure by applying Euler's and Bernoulli's equations CO4: Find the forces exerted on objects by applying momentum equation & Discuss the behaviour of real fluid CO5: Define the energy grade line and estimate energy losses in pipe flow & Calculate the magnitudes of hydrostatic forces on surfaces.
143	BTCEPCC406	Building Planning	<ul style="list-style-type: none"> <li>• To understand the fundamental principles and concepts of planning and architecture for buildings.</li> <li>• To study about different views of layout.</li> <li>• To learn the development controls covered by building bye laws and national building code for buildings</li> </ul>	CO1: Comprehend local building bye-laws and provisions of National Building Code in respect of building and town planning. CO2: Discuss various aspects of principles of planning and architecture in planning building and mass composition. CO3: Explain the principles of planning and design considerations to construct earthquake resistant building. CO4: Prepare working drawings, foundation plans and other executable drawings with proper details for residential buildings.

## Course Outcomes

S. No.	Course Code	Course Title	Course Objective	Expected Outcome
144	BTCEPCC407	Concrete Technology	<ul style="list-style-type: none"> <li>• To define and understand concepts related Concrete technology which involves types and property of concrete and different adhesive materials and its vital use for safe, economic development for the buildings.</li> <li>• To present the foundations of basic Engineering tools and concepts related to Concrete technology and Civil Engineering.</li> <li>• To give an experience in the implementation of Engineering concepts which are applied in field of Civil Engineering.</li> </ul>	<p>CO1: Think logically for development Concrete technology application in field of Civil Engineering.</p> <p>CO2: Gain an experience in the implementation of Concrete Materials on engineering concepts which are applied in field Construction Field</p> <p>CO3: Identify the functional role of ingredients of concrete and apply this knowledge to mix design philosophy</p> <p>CO4: Acquire and apply fundamental knowledge in the fresh and hardened properties of concrete</p> <p>CO5: Evaluate the effect of the environment on service life performance, properties and failure modes of structural concrete and demonstrate techniques of measuring the Non Destructive Testing of concrete structure.</p>
145	BTCEPCC 408	Material Testing Lab	<ul style="list-style-type: none"> <li>• To apply knowledge of mathematics and engineering in calculating the mechanical properties of structural materials.</li> <li>• To function on multi-disciplinary teams in the area of materials testing.</li> <li>• To use the techniques, skills and modern engineering tools necessary for engineering.</li> <li>• To understand of professional and ethical responsibility in the areas of material testing.</li> <li>• To communicate effectively the mechanical properties of materials.</li> </ul>	<p>CO1: Extend the knowledge about the characteristics, sources and defects in various materials.</p> <p>CO2: Design and test the materials either in the laboratory or in the field before their actual use at the site.</p> <p>CO3: Attain the knowledge of different components of building, their classification, materials and methods of construction and causes of their failures.</p> <p>CO4: Know the various services to be provided and the defects in the buildings along with the remedial measures for proper maintenance of the buildings.</p>
146	BTCEPCC 409	Hydraulics Engineering Lab	<ul style="list-style-type: none"> <li>• To provide practical knowledge in verification of principles of fluid flow</li> <li>• To impart knowledge in measuring pressure, discharge and velocity of fluid +flow</li> <li>• To understand Major and Minor Losses</li> <li>• To gain knowledge in performance testing of Hydraulic Turbines and Hydraulic Pumps at constant speed and Head</li> <li>• Students will understand and be able to apply fundamental concepts and techniques of hydraulics and hydrology in the analysis, design, and operation of water resources systems.</li> </ul>	<p>CO1: Become familiar with different water resources terminology like hydrology, ground water, hydraulics of pipelines and open channel.</p> <p>CO2: Understand and be able to use the energy and momentum equations.</p> <p>CO3: Analyze flow in closed pipes, and design and selection of pipes including sizes.</p> <p>CO4: Understand pumps classification and be able to develop a system curve used in pump selection.</p> <p>CO5: Design and select pumps (single or multiple) for different hydraulic applications.</p>

## Course Outcomes

S. No.	Course Code	Course Title	Course Objective	Expected Outcome
147	BTCEPCC 410	Building Drawing	<ul style="list-style-type: none"> <li>• To study the basic concepts about civil engineering.</li> <li>• To plan residential and public buildings.</li> </ul>	CO1: Select, Construct and Interpret appropriate drawing scale as per the situation. CO2: Draw simple curves like ellipse, cycloid and spiral. CO3: Draw Orthographic projections of points, lines and planes. CO4: Draw orthographic projection of solids like cylinders, cones, prisms pyramids including sections & Layout development of solids for practical situations. CO5: Draw isometric projections of simple objects.
148	BTCEPCC 411	Advanced Surveying Lab	<ul style="list-style-type: none"> <li>• To determine the relative position of any objects or points of the earth.</li> <li>• To determine the distance and angle between different objects.</li> <li>• To prepare a map or plan to represent an area on a horizontal plan.</li> <li>• To develop methods through the knowledge of modern science and the technology and use them in the field.</li> <li>• To solve measurement problems in an optimal way.</li> </ul>	CO1: Explain the theory and applications of earthworks set-out and volume calculations; CO2: Describe a range of equipment available for engineering surveying tasks; CO3: Analyze survey errors using methods described in Australian legislation; CO4: Review techniques used in mining and hydro-graphic surveying and explain their theoretical background; CO5: Use a range of surveying equipment and analyze the accuracy of the equipment and results.
149	BTCEPCC 412	Concrete Lab	<ul style="list-style-type: none"> <li>• To include advanced cement-based composites, emerging materials, and green materials.</li> <li>• Material properties are evaluated using conventional and innovative non-destructive evaluation methods.</li> <li>• To Brief course description: Microstructure of hydration products and its effect on properties of concrete.</li> <li>• To provide Mechanisms and interaction of chemical admixtures and industrial wastes to produce sustainable and high performance concrete.</li> <li>• To Evaluate of fresh and hardened properties of conventional and cement-based composites</li> </ul>	CO1: Outline the importance of testing of cement and its properties CO2: Assess the different properties of aggregate CO3: Summarize the concept of workability and testing of concrete CO4: Describe the preparation of green concrete CO5: Describe the properties of hardened concrete.

## Course Outcomes

S. No.	Course Code	Course Title	Course Objective	Expected Outcome
150	BTCESODECA 413	Social Outreach, Discipline & Extra Curricular Activities	<ul style="list-style-type: none"> <li>• To allowing students to explore strengths and talents outside of academics.</li> <li>• To helping students develop stronger time-management and organizational skills.</li> <li>• To giving students the opportunity to build friendships and participate in group activities outside of the tight circle of the regular classroom.</li> <li>• To helping to build confidence and self-esteem.</li> </ul>	<p>CO1: Develop their self-confidence, leadership qualities, and their responsibilities towards the community.</p> <p>CO2: Have an impact on academic development, personal development, and civic responsibility</p> <p>CO3: Understand the value of Social Work.</p> <p>CO4: Understand the Significance of Discipline in student's Life</p> <p>CO5: Contribute towards in social up-gradation by social organization like, Art of Living, Yoga etc., Blood donation, Awareness programs, personality development programs.</p>
151	BTCEESC 501	Construction Technology and Equipment	<ul style="list-style-type: none"> <li>• To understand the scope and outcome of construction technology.</li> <li>• To get proper knowledge about Safety in construction and Safety measure</li> <li>• To explore the Need of construction planning and its Management.</li> </ul>	<p>CO1: Understand the scope and outcome of construction technology.</p> <p>CO2: Understand the Fire safety provisions as per NBC.</p> <p>CO3: Get proper knowledge about Safety in construction and Safety measure.</p> <p>CO4: Know the Need of construction planning and its Management.</p> <p>CO5: Know the Construction Equipment and their Management.</p>
152	BTCEPCC 502	Structure Analysis-I	<ul style="list-style-type: none"> <li>• To know the structural vibration and Simple Harmonic Motion.</li> <li>• To understand the scope and outcome of Structure Analysis.</li> <li>• To analyze Indeterminate Structures.</li> </ul>	<p>CO1: Understand the scope and outcome of Structure Analysis.</p> <p>CO2: Analyze the Indeterminate Structures.</p> <p>CO3: Solve problems by Area moment method.</p> <p>CO4: Know the structural vibration and Simple Harmonic Motion.</p> <p>CO5: Evaluate solutions for Static and Kinematic indeterminacy.</p>
153	BTCEPCC 503	Design of Concrete Structures	<ul style="list-style-type: none"> <li>• To understand the scope and outcome of the Concrete Structures.</li> <li>• To evaluate the role of the Limit state of serviceability for deflection and collapse in shear.</li> <li>• To assess the structural behavior of concrete structures.</li> </ul>	<p>CO1: Understand the scope and outcome of the Concrete Structures.</p> <p>CO2: Evaluate the role of the Limit state of serviceability for deflection and collapse in shear.</p> <p>CO3: Assess the structural behavior of concrete structures.</p> <p>CO4: Solve problems related to Columns and Slabs.</p> <p>CO5: Solve problems related to Footing and Torsion.</p>

## Course Outcomes

S. No.	Course Code	Course Title	Course Objective	Expected Outcome
154	BTCEPCC 504	Geotechnical Engineering	<ul style="list-style-type: none"> <li>• To understand the scope and outcome of the Geotechnical Engineering.</li> <li>• To solve Compressibility and Consolidation of soil.</li> <li>• To analyze the Bearing Capacity of Soils.</li> </ul>	CO1: Understand the scope and outcome of the Geotechnical Engineering. CO2: Solve Compressibility and Consolidation of soil. CO3: Understand the Soil and soil-mass. CO4: Analyze the Bearing Capacity of Soils. CO5: Know the Planning of Investigations and Depth of exploration.
155	BTCEPCC 505	Water Resource Engineering	<ul style="list-style-type: none"> <li>• To understand the scope and outcome of Water Resource Engineering.</li> <li>• To study the Canal Irrigation, Embankment Dams and Well Irrigation.</li> <li>• To evaluate Hydrologic cycle and measurement of rainfall.</li> </ul>	CO1: Understand the scope and outcome of Water Resource Engineering. CO2: Study the design of channels. CO3: Study the Canal Irrigation, Embankment Dams and Well Irrigation. CO4: Evaluate Hydrologic cycle and measurement of rainfall. CO5: Evaluate Infiltration, Run off and Unit hydrograph.
156	BTCEPEC 506A	Air & Noise Pollution and Control	<ul style="list-style-type: none"> <li>• To understand the scope and outcome of the Air and Noise Pollution and Control.</li> <li>• To access the problems by Air pollutants and Effects on Health.</li> <li>• To evaluate solutions for noise on health and noise environments.</li> </ul>	CO1: Understand the scope and outcome of the Air and Noise Pollution and Control.. CO2: Access the problems by Air pollutants and Effects on Health. CO3: Study Air sampling and pollution measurement methods. CO4: Study the Removal of gaseous pollutants by adsorption, absorption. CO5: Evaluate solutions for noise on health and noise environments.
157	BTCEPEC 506B	Disaster Management	<ul style="list-style-type: none"> <li>• To understand the scope and outcome of the Disaster Management.</li> <li>• To understand the Concepts and definitions of Disaster, Hazard.</li> <li>• To study the Disaster Management and acts.</li> </ul>	CO1: Understand the scope and outcome of the Disaster Management. CO2: Understand the Concepts and definitions of Disaster and Hazard. CO3: Understand the Biological Disasters and Technological Disasters. CO4: Study Disaster Management and acts. CO5: Evaluate solutions for Disaster profile and disaster cycle.

## Course Outcomes

S. No.	Course Code	Course Title	Course Objective	Expected Outcome
158	BTCEPEC 506C	Town Planning	<ul style="list-style-type: none"> <li>• To understand the scope and outcome of the Town Planning.</li> <li>• To study the Civic Surveys and Zoning.</li> <li>• To get the knowledge about Public Buildings and Re-planning of existing towns.</li> </ul>	CO1: Understand the scope and outcome of the Town Planning. CO2: Study the Civic Surveys and Zoning. CO3: Know the Importance and Demand of housing. CO4: Get the knowledge of characteristics and effects of slums. CO5: Get the knowledge about Public Buildings and Re-planning of existing towns.
159	BTCEPEC 507A	Repair and Rehabilitation of Structures	<ul style="list-style-type: none"> <li>• To understand the scope and outcome of the Repair and Rehabilitation of Structures.</li> <li>• To know the Factors affecting and Preventive measures and Cracks in Concrete and Masonry Structures</li> <li>• To know the Materials for Repair and Under Water Repair.</li> </ul>	CO1: Understand the scope and outcome of the Repair and Rehabilitation of Structures. CO2: Know the factors affecting and Preventive measures for Cracks in Concrete and Masonry Structures. CO3: Get the Assessment of Risk/Damage in Structures. CO4: Study the Materials for Repair and Repair Techniques. CO5: Know the Materials for Repair and Under Water Repair.
160	BTCEPEC 507B	Ground Improvement Techniques	<ul style="list-style-type: none"> <li>• To understand the scope and outcome of the Ground Improvement Techniques.</li> <li>• To Study Densification by Compaction Near Surface.</li> <li>• To analyze the Design methods of reinforced earth wall.</li> </ul>	CO1: Understand the scope and outcome of the Ground Improvement Techniques. CO2: Study of Densification by Compaction near Surface. CO3: Understand the Pre-compression. CO4: Know the Modification by Grouting and Soil Reinforcement. CO5: Analyze the Design methods of reinforced earth wall.
161	BTCEPEC 507C	Energy Science and Engineering	<ul style="list-style-type: none"> <li>• To understand the scope and outcome of the Energy Science and Engineering.</li> <li>• To study the Energy &amp; Environment and Engineering for Energy conservation.</li> <li>• To know the Civil Engineering Projects connected with the Energy Sources.</li> </ul>	CO1: Understand the scope and outcome of the Energy Science and Engineering. CO2: Study the Energy & Environment and Engineering for Energy conservation. CO3: Know the Scientific principles and historical interpretation. CO4: Get the Remedies & alternatives for fossil fuels. CO5: Know the Civil Engineering Projects connected with the Energy Sources.
162	BTCEPCC 508	Concrete Structures Design Lab	<ul style="list-style-type: none"> <li>• To understand the design procedures of Concrete Structures.</li> <li>• To Analyze and Design different beams, slabs and footings.</li> </ul>	CO1: Understand the design procedures of Concrete Structures. CO2: Understand Working stress design philosophy and Limit State design philosophy. CO3: Work on Limit state of serviceability and codal method. CO4: Solve Problems on limit state of collapse in bond. CO5: Evaluate solutions for prismatic sections for shear.

## Course Outcomes

S. No.	Course Code	Course Title	Course Objective	Expected Outcome
163	BTCEPCC509	Geotechnical Engineering Lab	<ul style="list-style-type: none"> <li>• To study the soil and its engineering properties.</li> <li>• To determine different tests on soil.</li> </ul>	CO1: Study the soil and its engineering properties. CO2: Determine plastic, liquid and shrinkage limits. CO3: Solve problems related to compressibility parameters of soil. CO4: Determine different tests on soil. CO5: Determine the permeability of soil.
164	BTCEPCC 510	Water Resources Engineering Design Lab	<ul style="list-style-type: none"> <li>• To understand the scope and outcome of Water Resource Engineering.</li> <li>• To study the Canal Irrigation, Embankment Dams and Well Irrigation.</li> <li>• To evaluate Hydrologic cycle and measurement of rainfall.</li> </ul>	CO1: Understand the scope and outcome of Water Resource Engineering. CO2: Study the design of channels. CO3: Study the Canal Irrigation, Embankment Dams and Well Irrigation. CO4: Evaluate Hydrologic cycle and measurement of rainfall. CO5: Evaluate Infiltration, Run off and Unit hydrograph.
165	BTCEPSIT 511	Industrial Training	<ul style="list-style-type: none"> <li>• To acquire and apply fundamental principles of engineering.</li> <li>• To identify, formulate and present model problems.</li> <li>• To identify, formulate and model problems and find engineering solution based on a systems approach.</li> </ul>	CO1: Capability to acquire and apply fundamental principles of engineering. CO2: Become master in one's specialized technology CO3: Become updated with all the latest changes in technological world. CO4: Ability to identify, formulate and model problems and find engineering solution based on a systems approach.
166	BTCESODECA 512	Social Outreach, Discipline & Extra Curricular Activities	<ul style="list-style-type: none"> <li>• To allow students to explore strengths and talents outside of academics.</li> <li>• To help students develop stronger time-management and organizational skills.</li> <li>• To give students the opportunity to build friendships and participate in group activities outside of the tight circle of the regular classroom.</li> <li>• To help build confidence and self-esteem.</li> </ul>	CO1: Develop their self-confidence, leadership qualities, and their responsibilities towards the community. CO2: Have an impact on academic development, personal development, and civic responsibility CO3: Understand the value of Social Work. CO4: Understand the Significance of Discipline in student's Life CO5: Contribute towards social up-gradation by social organization like, Art of Living, Yoga etc., Blood donation, Awareness programs, personality development programs.
167	BTCEESC 601	Wind & Seismic Analysis	<ul style="list-style-type: none"> <li>• To understand the scope and outcome of the Wind And Seismic Pressures.</li> <li>• To design structures for wind and seismic loads.</li> </ul>	CO1: Understand the scope and outcome of the Wind And Seismic Pressures. CO2: Know the Symmetry and Asymmetry in building forms. CO3: Design Loads for wind and seismic loads. CO4: Solve problems using provisions as per IS codes. CO5: Know Earthquake Resistant Construction.

## Course Outcomes

S. No.	Course Code	Course Title	Course Objective	Expected Outcome
168	BTCEPCC 602	Structural Analysis-II	<ul style="list-style-type: none"> <li>• To understand the scope and outcome of the Structural Analysis.</li> <li>• To solve problems using different methods like Unit load method and Energy Methods.</li> <li>• To analyze of multistory frames and space trusses.</li> </ul>	<p>CO1: Understand the scope and outcome of the Structural Analysis.</p> <p>CO2: Solve problems using different methods like Unit load method and Energy Methods.</p> <p>CO3: Solve problems of two hinged and fixed type parabolic arches.</p> <p>CO4: Solve problems related to Unsymmetrical bending.</p> <p>CO5: Analyze multistory frames and space trusses.</p>
169	BTCEPCC 603	Environmental Engineering	<ul style="list-style-type: none"> <li>• To understand the scope and outcome of Environmental Engineering.</li> <li>• To analyze Water Treatment and Sewage.</li> <li>• To evaluate the composition and properties of air and noise.</li> </ul>	<p>CO1: Understand the scope and outcome of Environmental Engineering.</p> <p>CO2: Know the sources of Water and water quality issues.</p> <p>CO3: Understand analyzing Water Treatment and Sewage.</p> <p>CO4: Get knowledge about the Pollution due to improper disposal of sewage.</p> <p>CO5: Evaluate the composition and properties of air and noise.</p>
170	BTCEPCC 604	Design of Steel Structures	<ul style="list-style-type: none"> <li>• To understand the scope and outcome of the Steel Structures.</li> <li>• To solve problems related to Connections, Tension Members, Compression Members, etc.</li> <li>• To evaluate solutions for different type of steel structures.</li> </ul>	<p>CO1: Understand the scope and outcome of the Steel Structures.</p> <p>CO2: Study design of Beams, plate girder, gantry girder and Column Bases.</p> <p>CO3: Solve problems related to Connections, Tension Members, Compression Members, etc.</p> <p>CO4: Evaluate solutions for different type of steel structures.</p> <p>CO5: Study Member design under combined forces.</p>
171	BTCEPCC 605	Estimating & Costing	<ul style="list-style-type: none"> <li>• Impart the knowledge of estimating, costing and valuation for civil engineering structures.</li> <li>• Prepare and evaluate contract documents.</li> <li>• Identify and differentiate between the two types of estimate.</li> </ul>	<p>CO1: Compare different types of estimate, units of measurements &amp; payments for different item of works in construction and illustrate a relationship to Bill of Quantities and Scheduled rates</p> <p>CO2 : Understand the specifications of different Items of works.</p> <p>CO3: Estimate the quantities and evaluate the abstract cost for different types of buildings by Long wall-short wall method</p> <p>CO4: Estimate the quantities and evaluate the abstract cost for different types of buildings by Centre line method</p> <p>CO5: Organize Quantity surveying for any kind of civil structures using modern tools and manage the project problems, formulate and solve in teams, in order to improve future problem solving ability and able to present it.</p>

## Course Outcomes

S. No.	Course Code	Course Title	Course Objective	Expected Outcome
172	BTCEPEC 606A	Pre-Stressed Concrete	<ul style="list-style-type: none"> <li>• To understand the scope and outcome of the Pre-Stressed Concrete.</li> <li>• To analyze of Pre-stress and Bending Stresses.</li> <li>• To evaluate losses, deflection and design of Pre-stressed Concrete Members.</li> </ul>	<p>CO1: Understand the scope and outcome of the Pre-Stressed Concrete.</p> <p>CO2: Understand the Pre-tensioning and post-tensioning systems.</p> <p>CO3: Understand analysis of Pre-stress and Bending Stresses.</p> <p>CO4: Evaluate losses, deflection and design of Pre-stressed Concrete Members.</p> <p>CO5: Design Simply Supported Pre stressed Concrete Sections for flexure.</p>
173	BTCEPEC 606B	Solid and Hazardous Waste Management	<ul style="list-style-type: none"> <li>• To understand the scope and outcome of the Solid and Hazardous Waste.</li> <li>• To study Solid Waste Characterization.</li> <li>• To understand the Treatment and Disposal of Solid Waste.</li> </ul>	<p>CO1: Understand the scope and outcome of the Solid and Hazardous Waste.</p> <p>CO2: Get to know the Components of waste collection</p> <p>CO3: Know the E-Waste, Biomedical Waste.</p> <p>CO4: Study Solid Waste Characterization.</p> <p>CO5: Understand the Treatment and Disposal of Solid Waste.</p>
174	BTCEPEC 606C	Traffic Engineering and Management	<ul style="list-style-type: none"> <li>• To understand scope and outcome of the Traffic Engineering and Management.</li> <li>• To study Traffic Planning, its safety and management.</li> </ul>	<p>CO1: Understand the scope and outcome of the Traffic Engineering and Management.</p> <p>CO2: Understand of Traffic and environment hazards.</p> <p>CO3: Get the understanding of Speed, journey time and delay surveys.</p> <p>CO4: Study Traffic Planning, its safety and management.</p> <p>CO5: Know the Intelligent Transport System for traffic management.</p>
175	BTCEPEC 607A	Bridge Engineering	<ul style="list-style-type: none"> <li>• To understand the scope and outcome of the Bridge Engineering.</li> <li>• To design steel bridges using Codes and IRC loading.</li> <li>• To study different types of structures like slab culvert ,T-beam bridges , slab bridges and girder bridges.</li> </ul>	<p>CO1: Understand the scope and outcome of the Bridge Engineering.</p> <p>CO2: Understand the type of bridges &amp; classification of road &amp; railways bridges.</p> <p>CO3: Design through type truss bridges for railway loadings.</p> <p>CO4: Design steel bridges using Codes and IRC loading.</p> <p>CO5: Study different types of structures like slab culvert ,T-beam bridges , slab bridges and girder bridges.</p>

## Course Outcomes

S. No.	Course Code	Course Title	Course Objective	Expected Outcome
176	BTCEPEC 607B	Rock Engineering	<ul style="list-style-type: none"> <li>• To understand the scope and outcome of the Rock Engineering.</li> <li>• To study Engineering Classification, Properties and Laboratory Tests of Rocks</li> <li>• To get the knowledge of Strength of Rocks in Unconfined and confined condition.</li> </ul>	CO1: Understand the scope and outcome of the Rock Engineering. CO2: Study In-situ Tests on Rocks. CO3: Study the Engineering Classification, Properties and Laboratory Tests of Rocks CO4: Get the knowledge of Strength of Rocks in Unconfined and confined condition. CO5: Know the Bearing Capacity of Rocks.
177	BTCEPEC 607C	Geographic Information System & Remote Sensing	<ul style="list-style-type: none"> <li>• To understand the scope and outcome of the Geographic Information System &amp; Remote Sensing.</li> <li>• To Study Photogrammetry, Remote Sensing, Image Interpretation and Geographic Information System.</li> </ul>	CO1: Understand the scope and outcome of the Geographic Information System & Remote Sensing. CO2: Use the Digital Image Processing concept. CO3: Study Maps and Map substitutes and their uses. CO4: Study Photogrammetry, Remote Sensing, Image Interpretation and Geographic Information System. CO5: Understand the concept of Soil Erosion, Land Suitability analysis, etc.
178	BTCEPCC 608	Environmental Engineering Design and Lab	<ul style="list-style-type: none"> <li>• To understand the Population forecasting and Water Quality parameters.</li> <li>• To examine Physical, chemical and biological Characterization of water.</li> </ul>	CO1: Understand the Population forecasting and Water Quality parameters. CO2: Study the design of Sedimentation tanks, coagulation and flocculation tanks CO3: Design aerobic and anaerobic treatment units. CO4: Examine Physical, chemical and biological characterization of water. CO5: Study the design of disinfection units and transmission systems.
179	BTCEPCC 609	Steel Structure Design Lab	<ul style="list-style-type: none"> <li>• To understand the scope and outcome of the Steel Structures.</li> <li>• To solve problems related to Connections, Tension Members, Compression Members, etc.</li> <li>• To evaluate solutions for different type of steel structures.</li> </ul>	CO1: Understand the scope and outcome of the Steel Structures. CO2: Study design of Beams, plate girder, gantry girder and Column Bases. CO3: Solve problems related to Connections, Tension Members, Compression Members, etc. CO4: Evaluate solutions for different type of steel structures. CO5: Study Member design under combined forces.

## Course Outcomes

S. No.	Course Code	Course Title	Course Objective	Expected Outcome
180	BTCEPCC 610	Quantity Surveying and Valuation Lab	<ul style="list-style-type: none"> <li>• To understand the scope and outcome of the Quantity Surveying and Valuation.</li> <li>• To solve problems of Preliminary, Detailed Estimate and Rate Analysis of buildings.</li> <li>• To evaluate solutions related to Earthwork Calculation and Valuation of Buildings and Properties.</li> </ul>	CO1: Understand the scope and outcome of the Quantity Surveying and Valuation Lab. CO2: Evaluate the solutions related to Earthwork Calculation for Roads, Irrigation Canals and Channels. CO3: Solve problems of Preliminary, Detailed Estimate and Rate Analysis of buildings. CO4: Evaluate the solutions related to Valuation of Buildings and Properties. CO5: Understand the Long wall-Short wall and Centre line method.
181	BTCEPCC 611	Water and Earth Retaining Structures Design Lab	<ul style="list-style-type: none"> <li>• To understand the scope and outcome of the Water and Earth Retaining Structures design.</li> <li>• To analyze and design continuous beams, Circular domes, etc.</li> </ul>	CO1: Understand the scope and outcome of the Water and Earth Retaining Structures Design. CO2: Study the design of continuous beams and Circular beam. CO3: Study the design of Water Tanks and Water Towers, Circular domes, etc. CO4: Know the structural behaviour and stability. CO5: Study the design of Cantilever Retaining Walls.
182	BTCEPCC 612	Foundation Design Lab	<ul style="list-style-type: none"> <li>• To understand the scope and outcome of the Foundation Engineering.</li> <li>• To analyze and design different types of foundations and retaining structures.</li> </ul>	CO1: Understand the scope and outcome of the Foundation Engineering. CO2: Design different shallow foundations. CO3: Design different deep foundations. CO4: Know the design concepts of machine foundation. CO5: Design of retaining structures.
183	BTCESODECA 613	Social Outreach, Discipline & Extra Curricular Activities	<ul style="list-style-type: none"> <li>• To allowing students to explore strengths and talents outside of academics.</li> <li>• To helping students develop stronger time-management and organizational skills.</li> <li>• To giving students the opportunity to build friendships and participate in group activities outside of the tight circle of the regular classroom.</li> <li>• To helping to build confidence and self-esteem.</li> </ul>	CO1: Develop their self-confidence, leadership qualities, and their responsibilities towards the community. CO2: Have an impact on academic development, personal development, and civic responsibility CO3: Understand the value of Social Work. CO4: Understand the Significance of Discipline in student's Life CO5: Contribute towards in social up-gradation by social organization like, Art of Living, Yoga etc., Blood donation, Awareness programs, personality development programs.

## Course Outcomes

S. No.	Course Code	Course Title	Course Objective	Expected Outcome
184	BTCEPCC701	Transportation Engineering	<ul style="list-style-type: none"> <li>• To understand the applications of Transportation Engineering.</li> <li>• To study the Statistical Methods for Traffic Engineering.</li> <li>• To know the Traffic Characteristics, Environment, Management and Road Safety.</li> </ul>	<p>CO1: Understand the importance &amp; characteristics of road transport for geometric design of various roads with proper alignment based on planning principles, survey data, economics &amp; finance data.</p> <p>CO2: Recognize the knowledge of highway materials &amp; construction of various types of roads and identify the problems associated with roads &amp; remedies for same.</p> <p>CO3: Understand the traffic characteristics, interpretation of traffic data &amp; its uses, traffic safety &amp; various control measures and traffic environment interaction for safe &amp; healthy environment</p> <p>CO4: Apply existing technology to the design, construction, and maintenance of railway physical facilities</p> <p>CO5: Analyze major issues and problems of current interest to the Airport Engineering.</p>
185	BTCEPEC702A	Human Engineering and safety	<ul style="list-style-type: none"> <li>• To protect the comfort, health, safety and well-being of personnel</li> <li>• To minimize the risk of design-induced human performance issues, which may lead to major incidents, other adverse events, and reliability issues.</li> </ul>	<p>CO1: Understand the exposure of engineering design.</p> <p>CO2: Measure energy cost of different activities</p> <p>CO3: Use anthropometric parameters in designing of different civil engineering machines</p> <p>CO4: Equip with the knowledge of ergonomic assessment of different working environment</p> <p>CO5: Describe the professional ethics, holistic systems and implications of value based living</p>
186	BTCEPEC702B	Environmental Engineering and Disaster Management	<ul style="list-style-type: none"> <li>• To achieve the goal of environmental engineering is to ensure that societal development and the use of water, land and air resources are sustainable.</li> <li>• To understand the management of these resources so that environmental pollution and degradation is minimized.</li> </ul>	<p>CO1: Understand the various types of natural resources and problems due to over exploitation.</p> <p>CO2: Know the components of various types of ecosystem and interrelation between the components.</p> <p>CO3: Understand various factors which cause environmental pollution and their control measures.</p> <p>CO4: Understand various hazards &amp; disasters, their affects and mitigation measures.</p> <p>CO5: Analyze and interpret the Environmental Engg. Systems from chemistry and microbiological point of view.</p>

## Course Outcomes

S. No.	Course Code	Course Title	Course Objective	Expected Outcome
187	BTCEPEC702C	Non Destructive Testing	<ul style="list-style-type: none"> <li>• To introduce the basic principles, techniques, equipment, applications and limitations of NDT methods such as Visual, Penetrant Testing, Magnetic Particle Testing, Ultrasonic Testing, Radiography, Eddy Current.</li> <li>• To enable selection of appropriate NDT methods.</li> <li>• To identify advantages and limitations of nondestructive testing methods</li> <li>• To make aware the developments and future trends in NDT.</li> </ul>	<p>CO1: Have a basic knowledge of surface NDE techniques which enables to carry out various inspections in accordance with the established procedures.</p> <p>CO2: Calibrate the instrument and inspect for in-service damage in the components.</p> <p>CO3: Have a basic knowledge of ultrasonic testing which enables them to perform inspection of samples.</p> <p>CO4: Calibrate the instrument and evaluate the component for imperfections.</p> <p>CO5: Differentiate various defect types and select the appropriate NDT methods for the specimen.</p>
188	BTCEPCC703	Road Material Testing Lab	<ul style="list-style-type: none"> <li>• To apply knowledge of mathematics and engineering in calculating the mechanical properties of structural materials</li> <li>• To function on multi-disciplinary teams in the area of materials testing &amp; Ability to use the techniques, skills and modern engineering tools necessary for engineering.</li> <li>• To understand professional and ethical responsibility in the areas of material testing.</li> <li>• To communicate effectively the mechanical properties of materials.</li> </ul>	<p>CO1: Evaluate the strength of sub grade soil by CBR test.</p> <p>CO2: Recognize the knowledge about different physical properties of aggregates by performing different test on road aggregates.</p> <p>CO3: Outline the various properties of bitumen material and mixes by performing various tests on it.</p> <p>CO4: Identify different pavement and functions of different components in pavement.</p> <p>CO5: Design pavement and overlays as per need and field condition and Design bituminous mix as per Indian standard.</p>
189	BTCEPCC704	Professional Practices & Field Engin	<ul style="list-style-type: none"> <li>• To understand the Personal and professional development of a student through activities such as industry expert lectures, industrial visits, group discussions and seminars etc.</li> </ul>	<p>CO1: Demonstrate the information and data Search in advancements of Electrical and Electronics Engineering.</p> <p>CO2: Get the exposure to industry expert lectures and interaction.</p> <p>CO3: Demonstrate interpersonal skills by way of Group discussions in a healthy environment</p> <p>CO4: Develop confidence and life skills to handle engineering assignments</p> <p>CO5: Understand industrial environment and visit industry.</p>

## Course Outcomes

S. No.	Course Code	Course Title	Course Objective	Expected Outcome
190	BTCEPCC705	Soft Skill Lab	<ul style="list-style-type: none"> <li>• To know the Soft Skills Laboratory course equips students with required skills such as interpersonal skills, communication skills, leadership skills etc.</li> <li>• To understand the aim of training undergraduate students on employability skills to win in the job interviews and building confidence to handle professional tasks.</li> </ul>	CO1: Communicate through verbal/oral communication and improve the listening skills CO2: Write precise briefs or reports and technical documents. CO3: Participate in group discussion / meetings / interviews and prepare & deliver presentations. CO4: Become more effective individual through goal/target setting, self motivation and practicing creative thinking. CO5: Function effectively in multi-disciplinary and heterogeneous teams through the knowledge of team work, Inter-personal relationships, conflict management and leadership quality.
191	BTCEPCC706	Environmental Monitoring and Design Lab	<ul style="list-style-type: none"> <li>• To provide students with theoretical and practical knowledge in various chapters of environmental monitoring.</li> <li>• To get a better understanding of the importance and usefulness of environmental monitoring in environmental studies.</li> </ul>	CO1: Design Water Treatment Plant and Sewage Treatment, Plant Oxidation pond, stabilization pond and aerated lagoons etc. CO2: Analyze air pollution sources and its effects CO3: Investigate sources and classification of water pollution CO4: Perform air pollution sampling and measurement, air pollution control methods and equipment, air sampling techniques CO5: Monitor and audit management, noise level measurement techniques, instrumentation for environmental pollution.
192	BTCEPSIT707	Practical Training	<ul style="list-style-type: none"> <li>• To acquire and apply fundamental principles of engineering.</li> <li>• To identify, formulate and present model problems.</li> <li>• To identify, formulate and model problems and find engineering solution based on a systems approach.</li> </ul>	CO1: Capability to acquire and apply fundamental principles of engineering. CO2: Become master in one's specialized technology CO3: Become updated with all the latest changes in technological world. CO4: Ability to identify, formulate and model problems and find engineering solution based on a systems approach.
193	BTCEPCC708	Seminar	<ul style="list-style-type: none"> <li>• To Awareness of how to use values in improving your own professionalism.</li> <li>• To Learning about personal and communication styles for team building.</li> <li>• To identify, formulate and present model problems.</li> <li>• To Learning management of values.</li> </ul>	CO1: Personalize and create a communication style for individual & team building. CO2: Use values in improving one's own professionalism CO3: Develop the higher cognitive abilities that are analysis, synthesis and evaluation. CO4: Ability to identify, formulate and present model problems.

## Course Outcomes

S. No.	Course Code	Course Title	Course Objective	Expected Outcome
194	BTCE SODECA709	Social Outreach, Discipline & Extra Curricular Activities	<ul style="list-style-type: none"> <li>• To allowing students to explore strengths and talents outside of academics.</li> <li>• To helping students develop stronger time-management and organizational skills.</li> <li>• To giving students the opportunity to build friendships and participate in group activities outside of the tight circle of the regular classroom.</li> <li>• To helping to build confidence and self-esteem.</li> </ul>	<p>CO1: Develop their self-confidence, leadership qualities, and their responsibilities towards the community.</p> <p>CO2: Have an impact on academic development, personal development, and civic responsibility</p> <p>CO3: Understand the value of Social Work.</p> <p>CO4: Understand the Significance of Discipline in student's Life</p> <p>CO5: Contribute towards in social up-gradation by social organization like, Art of Living, Yoga etc., Blood donation, Awareness programs, personality development programs.</p>
195	BTCEPCC801	Project Planning and Construction Management	<ul style="list-style-type: none"> <li>• To analyze professional decisions based on ethical principles.</li> <li>• To analyze construction documents for planning and management of construction processes.</li> <li>• To analyze methods, materials, and equipment used to construct projects.</li> </ul>	<p>CO1: Understand the scope and outcome of the Project Planning and Construction Management.</p> <p>CO2: Know the use of Financial Evaluation of Projects and Project Planning.</p> <p>CO3: Understand the Importance of project scheduling.</p> <p>CO4: Get the idea of Monitoring the time progress and cost controlling measures.</p> <p>CO5: Know the concept of Contract Management and Safety.</p>
196	BTCEPEC802A	Energy Management	<ul style="list-style-type: none"> <li>• To maximize profit and minimize costs by optimizing energy procurement and utilization, throughout the organization.</li> <li>• To minimize energy costs without affecting production and quality and to minimize environmental effects.</li> </ul>	<p>CO1: Understand the scope and outcome of the Energy Management.</p> <p>CO2: Understand the Need for Energy Management by different Sectors.</p> <p>CO3: Study the Sustainable Development and Energy Demand Management.,</p> <p>CO4: Analyze the Energy management for cleaner production.</p> <p>CO5: Get to know the appropriate technologies for Sustainable Development.</p>
197	BTCEPEC802B	Waste and By-Product Utilization	<ul style="list-style-type: none"> <li>• To protect the environment through effective waste management techniques.</li> <li>• To protect health, well being and environment.</li> <li>• To prevent pollution.</li> <li>• To reduce and reuse of waste.</li> </ul>	<p>CO1: Understand the scope and outcome of the Waste and By-product Utilization.</p> <p>CO2: Understand the formation of byproducts and waste</p> <p>CO3: Understand the Waste utilization in various Sectors.</p> <p>CO4: Analyze the Waste treatment and its disposal, design, construction, operation and management.</p> <p>CO5: Understand the assessment, treatment and disposal of solid waste.</p>

## Course Outcomes

S. No.	Course Code	Course Title	Course Objective	Expected Outcome
198	BTCEPEC802C	Disaster Management	<ul style="list-style-type: none"> <li>• To provide basic conceptual understanding of disasters and its relationships with development.</li> <li>• To gain understand approaches of Disaster Risk Reduction (DRR) and the relationship between vulnerability, disasters, disaster prevention and risk reduction.</li> </ul>	CO1: Understand the scope and outcome of the Disaster Management. CO2: Understand Disasters and Hazards and related issues. CO3: Study the Hydro-meteorological Based and Geological Based Disasters and Man made Disasters. CO4: Know the Management roll in mitigating Disaster in Indian Textile Industries. CO5: Know the Roll of production people in Disaster Management.
199	BTCEPCC803	Project Planning and Construction Management lab	<ul style="list-style-type: none"> <li>• To Discuss principles of management and its functions in construction organization.</li> <li>• To get the Knowledge of organization's working procedures and organizational developments and group decision making.</li> <li>• To Identify quality of team leader and qualities of project leader.</li> </ul>	CO1: Understand the Project Planning and Construction Management, its applications. CO2: Study the Types of contracts, arbitration, etc. CO3: Study the drafting of tender documents, special terms and conditions. CO4: Understand the different models of PPP like BOT, BOOT etc. CO5: Study Network Analysis using PERT and CPM.
200	BTCEPCC804	Pavement Design	<ul style="list-style-type: none"> <li>• To Design geometric elements of Cross Section of various types of roads.</li> <li>• To Design geometric elements of Horizontal Alignment of Roads</li> <li>• To Design geometric elements of Vertical Alignment of Roads.</li> <li>• To design various devices for traffic management.</li> </ul>	CO1: Understand the Pavement Mix Analysis with IS code provisions. CO2: Study the Pavement Basics, Types & comparison. CO3: Study the Design of Flexible Pavements. CO4: Know the Specifications for rural roads. CO5: Study the Design of Concrete Pavements.
201	BTCEPSIT805	Project	<ul style="list-style-type: none"> <li>• To introduce the concept and methods required for the construction of large software intensive system.</li> <li>• To develop a broad understanding of the discipline of software engineering and management of software system.</li> <li>• To provide an understanding of both theoretical and methodological issues involve in modern software engineering project management and focus strongly on practical techniques.</li> </ul>	CO1: Capability to acquire and apply fundamental principles of engineering. CO2: Be a multi-skilled engineer with good technical knowledge, management, leadership and entrepreneurship skills. CO3: Identify, formulate and model problems and find engineering solution based on a systems approach. CO4: Capability and enthusiasm for self-improvement through continuous professional development and life-long learning.

## Course Outcomes

S. No.	Course Code	Course Title	Course Objective	Expected Outcome
202	BTCE SODECA 806	Social Outreach, Discipline & Extra Curricular Activities	<ul style="list-style-type: none"> <li>• To allowing students to explore strengths and talents outside of academics.</li> <li>• To helping students develop stronger time-management and organizational skills.</li> <li>• To giving students the opportunity to build friendships and participate in group activities outside of the tight circle of the regular classroom.</li> <li>• To helping to build confidence and self-esteem.</li> </ul>	<p>CO1: Develop their self-confidence, leadership qualities, and their responsibilities towards the community.</p> <p>CO2: Have an impact on academic development, personal development, and civic responsibility</p> <p>CO3: Understand the value of Social Work.</p> <p>CO4: Understand the Significance of Discipline in student's Life</p> <p>CO5: Contribute towards in social up-gradation by social organization like, Art of Living, Yoga etc., Blood donation, Awareness programs, personality development programs.</p>
203	BTBSC 101	Engineering Mathematics-I	<ul style="list-style-type: none"> <li>• To familiarize the prospective engineers with techniques in calculus, multivariate analysis and linear algebra.</li> <li>• To equip the students with standard concepts and tools at an intermediate to advanced level</li> <li>• To understand Fourier series representation of Periodic signals and tointroduce with Fourier Series.</li> </ul>	<p>CO1: Understand the calculation and Applications of definite integrals.</p> <p>CO2: Solve problems related to Sequences and Series.</p> <p>CO3: Interpret the concept of s series as the sum of a sequence and able to solve problems related to Fourier series.</p> <p>CO4: Interpret the concept of s series as the sum of a sequence and use the sequence of partial sums to determine divergence of a series.</p> <p>CO5: Understand the calculation and Applications of Multivariable integrals.</p>
204	BTBSC 102	Engineering Physics	<ul style="list-style-type: none"> <li>• To understand the concepts of interference, Diffraction and Polarization.</li> <li>• To know about wave particle duality.</li> <li>• To know applications of Optical fibre.</li> <li>• To know applications of Lasers in Science, engineering and medicine.</li> <li>• To know classification of Solid.</li> </ul>	<p>CO1: Enhance the basic skills required to understand, develop, and design various engineering applications involving Wave Optics.</p> <p>CO2: Understand Quantum Mechanics and apply them to diverse engineering problems.</p> <p>CO3: Analyze the nature of light propagation in guided medium for engineering applications and study in Coherence and Optical Fibers.</p> <p>CO4: Describe different Laser problems.</p> <p>CO5: Describe Material Science &amp; Semiconductor Physics.</p>

## Course Outcomes

S. No.	Course Code	Course Title	Course Objective	Expected Outcome
205	BTHSMC 103	Communication Skills	<ul style="list-style-type: none"> <li>• To improve communication skills with Basic English.</li> <li>• To know different types of communication.</li> <li>• To develop basic skills needed for writing short stories and poems.</li> </ul>	CO1: Understand Communication and Types of Communication. CO2: Know Grammar of Passive Voice, Reported Speech. CO3: Understand different ways of writing Job Application and Curriculum-Vitae. CO4: Describe different Short Stories for effective Learning. CO5: Describe different poems for improving communication skills.
206	BTESC 104	Programming for Problem Solving	<ul style="list-style-type: none"> <li>• To learn the fundamentals of computers.</li> <li>• To understand the various steps in program development.</li> <li>• To learn the syntax and semantics of C programming language.</li> <li>• To learn the usage of structured programming approach in solving problems.\</li> </ul>	CO1: Know and understand the conventions of Fundamentals of Computer. CO2: Represent algorithms through flowchart and pseudo code. CO3: Learn Number system and apply these skills in developing new products. CO4: Understand and learn C Programming. CO5: Comprehend the Development of C programs using- Arrays, functions.
207	BTESC 105A	Basic Electrical Engineering	<ul style="list-style-type: none"> <li>• To inculcate the essentials of Civil Engineering field to the students of all branches of Engineering.</li> <li>• To provide students the significance of the Civil Engineering Profession in satisfying societal needs.</li> </ul>	CO1: Apply basic skills for designing various instruments for engineering applications. CO2: Determine error in laboratory measurements and techniques used to minimize such error. CO3: Gain knowledge regarding the various laws and principles associated with electrical systems. CO4: Understand electrical machines and apply them for practical problems. CO5: Understand the concepts in the field of electrical engineering, projects and research.
208	BTESC 105B	Basic Civil Engineering	<ul style="list-style-type: none"> <li>• To inculcate the essentials of Civil Engineering field to the students of all branches of Engineering.</li> <li>• To provide students the significance of the Civil Engineering Profession in satisfying societal needs.</li> </ul>	CO1: Illustrate the fundamental aspects of Civil Engineering. CO2: Understand the scope of civil engineering. CO3: Explain the concepts of surveying for making horizontal and vertical measurements. CO4: Describe plan and set out of a building, also illustrate the uses of various building materials and explains the method of construction of different components of a building. CO5: Understand the modes of Traffic and Road Safety and Road Safety Measures

## Course Outcomes

S. No.	Course Code	Course Title	Course Objective	Expected Outcome
209	BTBSC 106	Engineering Physics Lab	<ul style="list-style-type: none"> <li>• To understand the concepts of interference.</li> <li>• To know about wavelength of light.</li> <li>• To know about depletion layer and band gap of semiconductor.</li> <li>• To know dispersion of light through prism.</li> <li>• To know principle of Hall Effect.</li> </ul>	CO1: Understand the usage of common Ammeter, voltmeter and Multimeter. CO2: Formulate and solve complex AC, DC circuits. CO3: Understand the usage of common electrical measuring instruments. CO4: Identify the type of electrical machine used for that particular application. CO5: Understand the usage of optical instruments.
210	BTHSMC 107	Language Lab	<ul style="list-style-type: none"> <li>• To understand concepts of basic English language fundamentals.</li> <li>• To understand the communication skills.</li> <li>• To develop Dialogue Writing and Listening comprehension.</li> </ul>	CO1: Understand the Phonetic Symbols and Transcriptions. CO2: Understand the skills required in Extempore. CO3: Improve their communication skills for Group Discussion. CO4: Improve their technical communication skills. CO5: Understand Dialogue Writing and Listening skills.
211	BTESC 108	Computer Programming Lab	<ul style="list-style-type: none"> <li>• To understand the various steps in program development.</li> <li>• To learn the syntax and semantics of C programming language.</li> <li>• To learn the usage of structured programming approach in solving problems.</li> </ul>	CO1: Learn about the C Library, Preprocessor directive, Input-output statement. CO2: Learn data type, variables, and conditional statement. CO3: Learn about array and string operations. CO4: Understand File handling operations. CO5: Learn programs related to C Programming and apply them to solve real world problems.
212	BTESC109A	Basic Electrical Engineering Lab	<ul style="list-style-type: none"> <li>• To Introduce The Various Activities Regarding Measurement And Leveling</li> <li>• To Water Supply Procedure And Various Discharge And Pressure Measuring Apparatuses</li> </ul>	CO1: Adapt knowledge regarding the various laws and principles associated with electrical systems. CO2: Adapt knowledge regarding electrical machines and apply them for practical problems. CO3: Understand various types' Electrical Equipments. CO4: Understanding digital measuring equipments.
213	BTESC109B	Basic Civil Engineering Lab	<ul style="list-style-type: none"> <li>• To Introduce The Various Activities Regarding Measurement And Leveling</li> <li>• To Water Supply Procedure And Various Discharge And Pressure Measuring Apparatuses</li> </ul>	CO1: Conduct survey and collect field data. CO2: Review field notes from survey data. CO3: Interpret survey data and compute areas and volumes. CO4: Describe Total station and measurement CO5: Describe various water fittings and find out the various fluids properties

## Course Outcomes

S. No.	Course Code	Course Title	Course Objective	Expected Outcome
214	BTESC 110	Computer Aided Engineering Graphics	<ul style="list-style-type: none"> <li>• To Increase ability to communicate with people</li> <li>• To Learn to sketch and take object dimensions.</li> <li>• To Learn to take data and transform it into graphic drawings.</li> </ul>	<p>CO1: Know and understand the conventions and the method of engineering drawing.</p> <p>CO2: Interpret engineering drawings using fundamentals of different views to construct basic and intermediate geometry.</p> <p>CO3: Know the Theory of sectioning and Section of Solids.</p> <p>CO4: Comprehend the theory of projection.</p> <p>CO5: Improve their drawing skill in the form of Computer Graphics.</p>
215	BTSODECA111	Discipline	<ul style="list-style-type: none"> <li>• To allowing students to explore strengths and talents outside of academics.</li> <li>• To helping students develop stronger time-management and organizational skills.</li> <li>• To giving students the opportunity to build friendships and participate in group activities outside of the tight circle of the regular classroom.</li> <li>• To helping to build confidence and self-esteem.</li> </ul>	<p>CO1: Develop their self-confidence, leadership qualities, and their responsibilities towards the community.</p> <p>CO2: Have an impact on academic development, personal development, and civic responsibility</p> <p>CO3: Understand the value of Social Work.</p> <p>CO4: Understand the Significance of Discipline in student's Life</p> <p>CO5: Contribute towards in social up-gradation by social organization like, Art of Living, Yoga etc., Blood donation, Awareness programs, personality development programs.</p>
216	BTBSC 201	Engineering Mathematics-II	<ul style="list-style-type: none"> <li>• To provide detailed of matrices which is applied for solving system of linear equations and useful in various fields of technology.</li> <li>• To understand the course is an introduction to ordinary differential equations.</li> <li>• To understand the collection of methods and techniques used to find solutions to several types of differential equations, including first order scalar equations.</li> </ul>	<p>CO1: Understand the matrices, Rank of a matrix, rank-nullity theorem; System of linear equations.</p> <p>CO2: Identify, analyze and subsequently solve physical situations whose behavior can be described by First order and First degree ordinary differential.</p> <p>CO3: Determine solutions to second order linear differential equations with variable coefficients.</p> <p>CO4: Solve Engineering problems using different methods and techniques.</p> <p>CO5: Evaluate the first order and Second order partial differential equations</p>

## Course Outcomes

S. No.	Course Code	Course Title	Course Objective	Expected Outcome
217	BTBSC 202	Engineering Chemistry	<ul style="list-style-type: none"> <li>• To acquire the knowledge about impurities in water, their determination and purification.</li> <li>• To learn about different types of fuel and lubricant and their applications.</li> <li>• To gain the basic knowledge, applications and control methods of corrosion.</li> <li>• To get the knowledge of preparation and significance of explosives, cement, refractories and glass.</li> <li>• To get the knowledge of organic reaction mechanism and their uses with different types of drugs</li> </ul>	<p>CO1: gain knowledge about impurities in water, their determination and purification.</p> <p>CO2: understand organic fuels and various emerging new areas of organic chemistry.</p> <p>CO3: learn about Corrosion and its control.</p> <p>CO4: Get knowledge about the chemistry of some Engineering Materials like Portland Cement.</p> <p>CO5: understand and study Organic reaction mechanisms.</p>
218	BTHSMC 203	Human Values	<ul style="list-style-type: none"> <li>• To Know the basic guidelines, content and Process for Value Education</li> <li>• To develop understanding different Harmony concept.</li> <li>• To understand professional ethics and natural acceptance of human values.</li> </ul>	<p>CO1: Understand and analyze Basic Guidelines, Content and Process for Value Education.</p> <p>CO2: Understand Harmony in the Human Being - Harmony in Myself.</p> <p>CO3: Understand Harmony in the Family and Society- Harmony in Human-Human Relationship.</p> <p>CO4: Understand Harmony in the Nature and Existence – Whole existence as Coexistence.</p> <p>CO5: Understand of Harmony on Professional Ethics. Natural acceptance of human values.</p>
219	BTESC 204	Basic Mechanical Engineering	<ul style="list-style-type: none"> <li>• To Increase ability to understand machine working</li> <li>• To Learn to understand fundamentals of mechanical systems</li> <li>• To Learn to make different mechanical aspects of engineering</li> </ul>	<p>CO1: Know and understand the Fundamentals of thermal engineering, mechanical machine design, industrial engineering and manufacturing technology.</p> <p>CO2: Understand the Refrigeration and Air Conditioning.</p> <p>CO3: Understand the Applications and working of Reciprocating and Centrifugal pumps.</p> <p>CO4: Know the Transmission of Power through Belt and Rope Drives, Gears.</p> <p>CO5: Understand of Primary Manufacturing Processes.</p>

## Course Outcomes

S. No.	Course Code	Course Title	Course Objective	Expected Outcome
220	BTESC205A	Basic Civil Engineering	<ul style="list-style-type: none"> <li>• To Understand the basic concept of Electrical engineering instruments for engineering applications.</li> <li>• To Understand the basic electrical engineering parameters and their importance.</li> <li>• To Understand the concept of various laws and principles associated with electrical systems.</li> <li>• To Develop the knowledge to apply concepts in the field of electrical engineering, projects and research.</li> </ul>	CO1: Illustrate the fundamental aspects of Civil Engineering. CO2: Understand the scope of civil engineering. CO3: Explain the concepts of surveying for making horizontal and vertical measurements. CO4: Describe plan and set out of a building, also illustrate the uses of various building materials and explains the method of construction of different components of a building. CO5: Understand the modes of Traffic and Road Safety and Road Safety Measures
221	BTESC205B	Basic Electrical Engineering	<ul style="list-style-type: none"> <li>• To Understand the basic concept of Electrical engineering instruments for engineering applications.</li> <li>• To Understand the basic electrical engineering parameters and their importance.</li> <li>• To Understand the concept of various laws and principles associated with electrical systems.</li> <li>• To Develop the knowledge to apply concepts in the field of electrical engineering, projects and research.</li> </ul>	CO1: Apply basic skills for designing various instruments for engineering applications. CO2: Determine error in laboratory measurements and techniques used to minimize such error. CO3: Gain knowledge regarding the various laws and principles associated with electrical systems. CO4: Understand electrical machines and apply them for practical problems. CO5: Understand the concepts in the field of electrical engineering, projects and research.
222	BTHSMC 206	Advanced English	<ul style="list-style-type: none"> <li>• To Develop basic communication concept for social environment.</li> <li>• To Improve conversation skills to increase confidence and proficiency.</li> <li>• To understand the concept of English in 'real life' situations.</li> <li>• To apply grammar knowledge for growing according to environment.</li> </ul>	CO 1: Understand Communicate in a variety of social, travel and work-related situations CO 2: Understand conversation skills and Widen vocabulary skills CO 3: Apply proficiency in all major skills CO 4: Apply Practice English in 'real life' situations CO 5: Learn how to apply grammar knowledge
223	BTBSC 207	Engineering Chemistry Lab	<ul style="list-style-type: none"> <li>• To understand the method for the determination of hardness in water and purification process.</li> <li>• To understand about different types of volumetric analysis.</li> <li>• To learn about properties of lubricant oil.</li> <li>• To Synthesize a small drug molecule and analyse a salt sample</li> </ul>	CO1: Understand the method for the determination of hardness in water and purification process. CO2: understand about different types of volumetric analysis. CO3: learn about properties of lubricant oil. CO4: Synthesize a small drug molecule and analyse a salt sample

## Course Outcomes

S. No.	Course Code	Course Title	Course Objective	Expected Outcome
224	BTHSMC 208	Human Values Activities	<ul style="list-style-type: none"> <li>• To Understand the basic guidelines, content and process for value education.</li> <li>• To develop understanding different Harmony concept.</li> <li>• To understand professional ethics and natural acceptance of human values.</li> </ul>	<p>CO1: Analyze Basic Guidelines, Content and Process for Value Education.</p> <p>CO2: Understanding Harmony in the Human Being - Harmony in Myself.</p> <p>CO3: Understand Harmony in the Family and Society- Harmony in Human-Human Relationship. Recollect and narrate an incident in your life.</p> <p>CO4: Understand Harmony in the Nature and Existence – Whole existence as Coexistence. Summarize the core message of this course grasped by you.</p> <p>CO5: List and Implicate the above Holistic Understanding of Harmony on Professional Ethics. Natural acceptance of human values.</p>
225	BTESC 209	Manufacturing Practices Workshop	<ul style="list-style-type: none"> <li>• To discuss the modules include training on different trades like Fitting, Carpentry and Casting</li> <li>• To learn various joints are made using wood and other metal pieces.</li> <li>• To develop machining skills in students.</li> </ul>	<p>CO1: Describe cast different parts through Carpentry.</p> <p>CO2: Define control manufacturing via computers.</p> <p>CO3: Understanding use power tools and fitting tools.</p> <p>CO4: Knowledge of various welding operations</p> <p>CO5: Understanding different metallic and non-metallic objects.</p>
226	BTESC210A	Basic Civil Engineering Lab	<ul style="list-style-type: none"> <li>• To understand training on different trades like Fitting, Carpentry and Casting</li> <li>• To learn various joints are made using wood and other metal pieces.</li> <li>• To develop machining skills in students.</li> </ul>	<p>CO1: Conduct survey and collect field data.</p> <p>CO2: Review field notes from survey data.</p> <p>CO3: Interpret survey data and compute areas and volumes.</p> <p>CO4: Describe Total station and measurement</p> <p>CO5: Describe various water fittings and find out the various fluids properties</p>
227	BTESC 210B	Basic Electrical Engineering Lab	<ul style="list-style-type: none"> <li>• To understand training on different trades like Fitting, Carpentry and Casting</li> <li>• To learn various joints are made using wood and other metal pieces.</li> <li>• To develop machining skills in students.</li> </ul>	<p>CO1. Adapt knowledge regarding the various laws and principles associated with electrical systems.</p> <p>CO2: Adapt knowledge regarding electrical machines and apply them for practical problems.</p> <p>CO3: Understand various types' Electrical Equipments.</p> <p>CO4: Understanding digital measuring equipments.</p>

## Course Outcomes

S. No.	Course Code	Course Title	Course Objective	Expected Outcome
228	BTESC 211	Computer Aided Machine Drawing	<ul style="list-style-type: none"> <li>• To design, develop and analyze simple linear and non linear computer based drawing.</li> <li>• To identify and apply the suitable knowledge of computers to understand the shape and size of Drawing Objects.</li> </ul>	CO1: Understand the conventions and the method of engineering drawing. CO2: Interpret engineering drawings using fundamentals of different views to construct basic and intermediate geometry. CO3: Adapt theory of sectioning and Section of Solids. CO4: Classify the theory of projection. CO5: Understand drawing skill in the form of Computer Graphics.
229	BTSODECA212	Social Outreach, Discipline & Extra Curricular Activities	<ul style="list-style-type: none"> <li>• To allowing students to explore strengths and talents outside of academics.</li> <li>• To helping students develop stronger time-management and organizational skills.</li> <li>• To giving students the opportunity to build friendships and participate in group activities outside of the tight circle of the regular classroom.</li> <li>• To helping to build confidence and self-esteem.</li> </ul>	CO1: Develop their self-confidence, leadership qualities, and their responsibilities towards the community. CO2: Have an impact on academic development, personal development, and civic responsibility CO3: Understand the value of Social Work. CO4: Understand the Significance of Discipline in student's Life CO5: Contribute towards in social up-gradation by social organization like, Art of Living, Yoga etc., Blood donation, Awareness programs, personality development programs.
230	BTMEBSC301	Advance Engineering Mathematics-I	<ol style="list-style-type: none"> <li>1. To Solve probability problems and the transformation.</li> <li>2. To Differentiate and integrate standard functions of several variables</li> <li>3. To Define and calculate selected quantities in vector calculus</li> <li>4. To Formulate and solve engineering optimization problems</li> <li>5. To Solve second order ordinary differential equations with constant coefficients</li> </ol>	CO1 Apply the fundamental concepts of Ordinary Differential Equations and Partial Differential Equations and the basic numerical methods for their resolution. CO2 Solve the problems choosing the most suitable method. CO3 Understand the difficulty of solving problems analytically and the need to use numerical approximations for their resolution. CO4 Use computational tools to solve problems and applications of Ordinary Differential Equations and Partial Differential Equations. CO5 Compute differential equation problems in the field of Industrial Organisation Engineering.

## Course Outcomes

S. No.	Course Code	Course Title	Course Objective	Expected Outcome
231	BTMEHSMC302	Managerial Economics & Financial Accounting	<ul style="list-style-type: none"> <li>• To discuss the economic concepts, theories, tools, and methodologies to solve practical problems in a business.</li> <li>• To provide the student with basic understanding of financial accounting that can be used in decision making techniques.</li> </ul>	CO1 Understand the conceptual knowledge of accounting CO2 Sharpen the analytical skills through integrating their knowledge of economic theories with decision making techniques. CO3 Analyze different market structures and pricing theories. CO4 Discuss the accounting process and preparation of final accounts of sole trader CO5 Understand the mechanism of demand and supply.
232	BTMEESC303	Engineering Mechanics	<ul style="list-style-type: none"> <li>• To learn a process for analysis of static objects</li> <li>• To learn concepts of force, moment, and mechanical equilibrium;</li> <li>• To analyze forces and moments in two and three dimensions;</li> <li>• To analyze distributed forces and internal loads.</li> <li>• To analyze forces in various systems such as frames, machines, trusses, beams and cables</li> </ul>	CO1: Use a standard process for analyzing static objects CO2: Define a force and moment CO3: Apply forces and moments in two and three dimensions, and find a component of a force or moment in a given direction. CO4: Draw and Construct free body diagrams of an object or a system of connected objects CO5: Use conditions of equilibrium and known forces and moments to solve for unknown external and internal forces and moments present in an object of system of connected objects
233	BTMEPCC304	Engineering Thermodynamics	surroundings <ul style="list-style-type: none"> <li>• To learn about various thermodynamic laws.</li> <li>• To evaluate the changes in properties of substances in various processes</li> <li>• To understand the difference between high grade and low grade energies and II law limitations on energy conversion.</li> </ul>	CO1: To Describe about work and heat interactions, and balance of energy between system and its surroundings. CO2: To learn about application of I law to various energy conversion devices CO3: To evaluate the changes in properties of substances in various processes CO4: To understand the difference between high grade and low grade energies and II law limitations on energy conversion CO5: To examine the condition of steam and performance of vapour power cycle and vapour compression cycle.

## Course Outcomes

S. No.	Course Code	Course Title	Course Objective	Expected Outcome
234	BTMEPCC305	Material Science and Engineering	<ul style="list-style-type: none"> <li>• To understand the correlation between the internal structure of materials, their mechanical properties and various methods to quantify their mechanical integrity and failure criteria.</li> <li>• To provide a detailed interpretation of equilibrium phase diagrams.</li> </ul>	<p>CO1. Identify crystal structures for various materials and understand the defects in such structures</p> <p>CO2. Understand material properties of ferrous and non-ferrous alloys</p> <p>CO3. Describe the quantify mechanical integrity and failure in materials</p> <p>CO4. Define the different mechanical properties of material by studying different destructive and non- destructive testing.</p> <p>CO5. Articulate and utilize corrosion prevention strategies and estimate corrosion behavior of materials and components</p>
235	BTMEPCC306	Mechanics of Solids	<ul style="list-style-type: none"> <li>• To understand the nature of stresses developed in simple geometries such as bars, cantilevers, beams, shafts, cylinders and spheres for various types of simple loads</li> <li>• To calculate the elastic deformation occurring in various simple geometries for different types of loading</li> </ul>	<p>CO1: Recognize various types loads applied on machine components of simple geometry and understand the nature of internal stresses that will develop within the components</p> <p>CO2: Evaluate the strains and deformation that will result due to the elastic stresses developed within the materials for simple types of loading</p> <p>CO3: Calculate Shear Force and Bending Moment diagrams for statically determinate beam due to concentrated load, uniformly distributed load, uniformly varying load and couple.</p> <p>CO4: Determine bending and shear stresses in machine elements.</p> <p>CO5: Determine beams subjected to concentrated load, uniformly distributed load, uniformly varying load and couple and also strain energy in members subjected to gradual, sudden and impact loads</p>
236	BTMEPCC307	Machine Drawing Practice	<ul style="list-style-type: none"> <li>• To Increase ability to communicate object drawing details</li> <li>• To learn to sketch and take object dimensions.</li> <li>• To learn to take data and transform it into graphic drawings.</li> <li>• To learn basic engineering drawing formats</li> <li>• To prepare the student for future engineering positions</li> </ul>	<p>CO1: Understand the conventions and the method of engineering drawing.</p> <p>CO2: Interpret engineering drawings using fundamental technical mathematics.</p> <p>CO3: Improve their visualization skills so that they can apply these skill in developing new products.</p> <p>CO4: Improve their technical skills in understanding engineering drawings.</p> <p>CO5: Comprehend the theory of projection.</p>

## Course Outcomes

S. No.	Course Code	Course Title	Course Objective	Expected Outcome
237	BTMEPCC308	Materials Testing Lab	<ul style="list-style-type: none"> <li>• To review physics and chemistry in the context of materials science &amp; engineering.</li> <li>• To describe the different types of bonding in solids, and the physical ramifications of these differences.</li> </ul>	CO1: Understand the various crystals structures through models BCC, FCC & HCP CO2: Understand the basic properties that characterize the behavior of materials CO3: Understand the type of loadings/environment that materials should withstand CO4: Select appropriate type of material for specific application CO5: Apply the different approaches to modify structure/microstructure in order to get desired properties
238	BTMEPCC309	Basic Mechanical Engineering Lab	<ul style="list-style-type: none"> <li>• To determine hardness of different materials using hardness testing machines.</li> <li>• To determine strength of materials using testing machine.</li> <li>• To learn the precautions and steps to operate different machine.</li> </ul>	CO1: Understand various pumps. CO2: Understand various tools. CO3: Understand different mechanical systems.
239	BTMEPCC310	Programming using MATLAB	<ul style="list-style-type: none"> <li>• To determine the software skills.</li> <li>• To learn the programming aspect of matrix lab.</li> </ul>	CO1: Understand the main features of the MATLAB development environment CO2: Use the MATLAB GUI effectively CO3: Design simple algorithms to solve problems CO4: Describe simple programs in MATLAB to solve scientific and mathematical problems
240	BTMEPSIT311	Industrial Training	<ul style="list-style-type: none"> <li>• To acquire and apply fundamental principles of engineering.</li> <li>• To update with all the latest changes in technological world.</li> <li>• To identify, formulate and model problems and find engineering solution based on a systems approach.</li> </ul>	CO1: Capability to acquire and apply fundamental principles of engineering. CO2: Become master in one's specialized technology CO3: Become updated with all the latest changes in technological world. CO4: Ability to identify, formulate and model problems and find engineering solution based on a systems approach.

## Course Outcomes

S. No.	Course Code	Course Title	Course Objective	Expected Outcome
241	BTMESODECA312	Social Outreach, Discipline & Extra Curricular Activities	<ul style="list-style-type: none"> <li>• To allowing students to explore strengths and talents outside of academics.</li> <li>• To helping students develop stronger time-management and organizational skills.</li> <li>• To giving students the opportunity to build friendships and participate in group activities outside of the tight circle of the regular classroom.</li> <li>• To helping to build confidence and self-esteem.</li> </ul>	<p>CO1: Develop their self-confidence, leadership qualities, and their responsibilities towards the community.</p> <p>CO2: Have an impact on academic development, personal development, and civic responsibility</p> <p>CO3: Understand the value of Social Work.</p> <p>CO4: Understand the Significance of Discipline in student's Life</p> <p>CO5: Contribute towards in social up-gradation by social organization like, Art of Living, Yoga etc., Blood donation, Awareness programs, personality development programs.</p>
242	BTMEBSC401	Data Analytics	<ul style="list-style-type: none"> <li>• To understand data retrieval, calculation, interpretation and analysis.</li> <li>• To gain knowledge of various techniques involved in data estimation.</li> </ul>	<p>CO1: Understand the key issues in big data management and its associated applications in intelligent business and scientific computing.</p> <p>CO2: Acquire fundamental enabling techniques and scalable algorithms like Hadoop, Map Reduce and NO SQL in big data analytics.</p> <p>CO3: Interpret business models and scientific computing paradigms, and apply software tools for big data analytics.</p> <p>CO4: Achieve adequate perspectives of big data analytics in various applications like recommender systems, social media applications etc.</p>
243	BTMEHSMC402	Technical Communications	<ul style="list-style-type: none"> <li>• To understand the characteristics of technical writing</li> <li>• To understand complex engineering ideas for targeted audiences.</li> <li>• To understand the advance technical writing in professional documents.</li> <li>• To write effective technical and business documents that are grammatically and stylistically correct</li> </ul>	<p>CO1: Understand basic communication skills used in technical areas.</p> <p>CO2: Understand technical materials, texts and information design &amp; development.</p> <p>CO3: Adapt an effective oral presentation, displaying the ability to engage the audience by employing a suitable delivery style, appropriate language and quality visual aids.</p> <p>CO4: Interpret Technical Reports and its types &amp; features</p> <p>CO5: Understand the structure and formats of technical articles and proposals</p>

## Course Outcomes

S. No.	Course Code	Course Title	Course Objective	Expected Outcome
244	BTMEESC403	Digital Electronics	<ul style="list-style-type: none"> <li>• To acquire the basic knowledge of digital logic levels and their application</li> <li>• To prepare students to perform the analysis and design of various digital electronic circuits.</li> </ul>	<p>CO1: Understand different type of codes and number systems which are used in digital transmission and computer systems.</p> <p>CO2: Apply the codes and number systems converting circuits and Compare different types of logic families which are the basic unit of different types of logic gates in the domain of economy, performance and efficiency.</p> <p>CO3: Analyze different types of digital electronic circuit using various mapping and logical tools and know the techniques to prepare the most simplified circuit using various mapping and mathematical methods.</p> <p>CO4: Design different types of with and without memory element digital electronic circuits for particular operation, within the real time of economic, performance, efficiency, user friendly and environmental constraints.</p> <p>CO5: Assess the nomenclature and technology in the area of various memory devices used and apply the memory devices in different types of digital circuits for real world application.</p>
245	BTMEPCC404	Fluid Mechanics & Fluid Machines	<ul style="list-style-type: none"> <li>• To learn about the application of mass and momentum conservation laws for fluid flows</li> <li>• To understand the importance of dimensional analysis</li> <li>• To obtain the velocity and pressure variations in various types of simple flows</li> <li>• To analyze the flow in water pumps and turbines.</li> </ul>	<p>CO1: Mathematically analyze simple flow situations</p> <p>CO2: Evaluate the performance of pumps and turbines.</p> <p>CO3: Use conservation laws in integral form and apply them to determine forces and moments on surfaces of various shapes and simple machines</p> <p>CO4: Use Euler's and Bernoulli's equations and the conservation of mass to determine velocities, pressures, and accelerations for incompressible and in viscous fluids</p> <p>CO5: Design simple pipe systems to deliver fluids under specified conditions.</p>

## Course Outcomes

S. No.	Course Code	Course Title	Course Objective	Expected Outcome
246	BTMEPCC405	Manufacturing Processes	<ul style="list-style-type: none"> <li>• To motivate and challenge students to understand and develop processes in correlation with material properties.</li> <li>• To understand change in the shape, size and form of the raw materials into the desirable product by conventional or unconventional manufacturing methods.</li> <li>• To understand the importance of prototyping concept in manufacturing processes</li> </ul>	<p>CO1: Select appropriate Manufacturing Processes to produce components.</p> <p>CO2: Interpret foundry practices like pattern making, mold making, Core making and Inspection of defects.</p> <p>CO3: Differentiate various metal forming processes such as Hot and Cold Working, Rolling, Forging, Extrusion and Drawing Processes.</p> <p>CO4: Use different cutting processes.</p> <p>CO5: Select appropriate machine and tools.</p>
247	BTMEPCC406	Theory of Machines	<ul style="list-style-type: none"> <li>• To understand the kinematics and rigid- body dynamics of kinematically driven machine components</li> <li>• To understand the motion of linked mechanisms in terms of the displacement, velocity and acceleration at any point in a rigid link</li> <li>• To design some linkage mechanisms and cam systems to generate specified output motion</li> <li>• To understand the kinematics of gear trains</li> </ul>	<p>CO1: Design various types of linkage mechanisms for obtaining specific motion and analyze them for optimal functioning</p> <p>CO2: Analyze the planar mechanisms for position, velocity and acceleration.</p> <p>CO3. Show the planar four bar and slider crank mechanisms for specified kinematic conditions.</p> <p>CO4. Evaluate gear tooth geometry and select appropriate gears for the required applications.</p> <p>CO5. Understand Cams and followers for specified motion profiles</p>

## Course Outcomes

S. No.	Course Code	Course Title	Course Objective	Expected Outcome
248	BTMEPCC407	Digital Electronics Lab	<ul style="list-style-type: none"> <li>• To understand the codes and number systems</li> <li>• To understand the techniques to prepare the most simplified circuit</li> </ul>	<p>CO1: Convert different type of codes and number systems which are used in digital transmission and computer systems.</p> <p>CO2: Apply the codes and number systems converting circuits and Compare different types of logic families which are the basic unit of different types of logic gates in the domain of economy, performance and efficiency.</p> <p>CO3: Analyze different types of digital electronic circuit using various mapping and logical tools and know the techniques to prepare the most simplified circuit using various mapping and mathematical methods.</p> <p>CO4: Calculate different types of digital electronic circuits with and without memory element for particular operation, within the real time of performance, efficiency, user friendly and environmental constraints.</p> <p>CO5: Describe the nomenclature and technology in the area of various memory devices used and apply the memory devices in different types of digital circuits for real world application.</p>
249	BTMEPCC408	Fluid Mechanics Lab	<ul style="list-style-type: none"> <li>• To understand basic units of measurement, convert units, and their applications</li> <li>• To discuss the differences among measurement techniques, their relevance and applications</li> </ul>	<p>CO1: Identify, name and characterize flow patterns and regimes</p> <p>CO2: Understand basic units of measurement and conversion of units</p> <p>CO3: Utilize basic measurement techniques of fluid mechanics</p> <p>CO4: Discuss the differences among measurement techniques, their relevance and applications</p> <p>CO5: Measure fluid pressure and relate it to flow velocity</p>
250	BTMEPCC409	Production Practice Lab	<ul style="list-style-type: none"> <li>• To acquaint the various conventional manufacturing shop</li> <li>• To know about the applications of advanced manufacturing processes</li> <li>• To learn different machine tool in details</li> </ul>	<p>CO1: Get knowledge in various metal cutting operations in machine tools like lathe, drilling, milling, grinding, shaping, and planning</p> <p>CO2: Know various machine tools and equipment for manufacturing</p> <p>CO3: Make various types of threads</p> <p>CO4: Understand the concept of patterns.</p>

## Course Outcomes

S. No.	Course Code	Course Title	Course Objective	Expected Outcome
251	BTMEPCC410	Theory of Machine Lab	<ul style="list-style-type: none"> <li>• To determine the balancing of masses of rotating and reciprocating machine elements.</li> <li>• To understand the principles of gyroscope and governors</li> <li>• To understand working of brakes and dynamometer</li> <li>• To determine the moment of inertia of various mechanical systems.</li> </ul>	<p>CO1: Apply the principles of balancing of masses to various links, mechanisms and engines.</p> <p>CO2. Apply the principles of gyroscopic effects and stabilization on various transport vehicles and applications of various governors.</p> <p>CO3. Understand the working principles of brakes and dynamometer.</p> <p>CO4. Determine moment of inertia of mechanical systems.</p> <p>CO5. Determine the vibration parameters of different systems.</p>
252	BTMESODECA411	Social Outreach, Discipline & Extra Curricular Activates	<ul style="list-style-type: none"> <li>• To allowing students to explore strengths and talents outside of academics.</li> <li>• To helping students develop stronger time-management and organizational skills.</li> <li>• To giving students the opportunity to build friendships and participate in group activities outside of the tight circle of the regular classroom.</li> <li>• To helping to build confidence and self-esteem.</li> </ul>	<p>CO1: Develop their self-confidence, leadership qualities, and their responsibilities towards the community.</p> <p>CO2: Have an impact on academic development, personal development, and civic responsibility</p> <p>CO3: Understand the value of Social Work.</p> <p>CO4: Understand the Significance of Discipline in student's Life</p> <p>CO5: Contribute towards in social up-gradation by social organization like, Art of Living, Yoga etc., Blood donation, Awareness programs, personality development programs.</p>
253	BTMEPCC501	Mechatronics Systems	<ul style="list-style-type: none"> <li>• To understand the structure of microprocessors and their applications in mechanical device</li> <li>• To understand the principle of automatic control and real time motion control systems, with the help of electrical drives and actuators</li> <li>• To understand the use of micro-sensors and their applications in various fields</li> </ul>	<p>CO1: Identify the key elements of Mechatronics system, representation into block diagram</p> <p>CO2: Apply knowledge of the concept of signal processing and signal conditioning for its industrial applications</p> <p>CO3: Analyze the requirements for a given industrial process and select the most appropriate Actuators, sensors, design circuit according to applications</p> <p>CO4: Understand the different logic gates, architecture of microprocessor and microcontroller for industrial applications.</p> <p>CO5: Develop mechatronics system according to an Industrial Applications</p>

## Course Outcomes

S. No.	Course Code	Course Title	Course Objective	Expected Outcome
254	BTMEPCC502	Heat Transfer	<ul style="list-style-type: none"> <li>• To build a solid foundation in heat transfer exposing students to the three basic modes namely conduction, convection and radiation.</li> <li>• To study rigorous treatment of governing equations and solution procedures for the three modes will be provided, along with solution of practical problems using empirical correlations.</li> </ul>	<p>CO1: Formulate and analyze a heat transfer problem involving any of the three modes of heat transfer</p> <p>CO2: Obtain exact solutions for the temperature variation using analytical methods where possible or employ approximate methods or empirical correlations to evaluate the rate of heat transfer</p> <p>CO3: Design devices such as heat exchangers and also estimate the insulation needed to reduce heat losses where necessary.</p> <p>CO4: Calculate and execute the impact of boundary conditions on the solutions of heat transfer in conduction and convection problems like extended surfaces (Fins)</p> <p>CO5: Determine performance of thermal systems related to one dimension, steady state natural and Forced Convection heat transfer by theoretically and experimentally.</p>
255	BTMEPCC503	Manufacturing Technology	<ul style="list-style-type: none"> <li>• To provide knowledge on machines and related tools for manufacturing various components.</li> <li>• To understand the relationship between process and system in manufacturing domain.</li> <li>• To identify the techniques for the quality assurance of the products and the optimality of the process in terms of resources and time management.</li> </ul>	<p>CO1: Learn the tooling needed for manufacturing,</p> <p>CO2: Understand the dimensional accuracy.</p> <p>CO3: Apply tolerances in products.</p> <p>CO4: Analyze assembly of different components.</p> <p>CO5: Understand application of optimization methods in manufacturing.</p>

## Course Outcomes

S. No.	Course Code	Course Title	Course Objective	Expected Outcome
256	BTMEPCC504	Design of Machine Elements-I	<ul style="list-style-type: none"> <li>• To understand the origins, nature and applicability of empirical design principles, based on safety considerations</li> <li>• To understand the codes, standards and design guidelines for different elements</li> </ul>	CO1: Recognize the design methodologies employed for the design of various machine components. CO2: Apply knowledge of the stress and strain of mechanical components CO3: Develop Logical and Analytical ability to apply Knowledge of various theories of failures for design of Mechanical components use in Industries CO4: Understand the mechanism of fatigue failures of parts and its use in mechanical component design. CO5: Understand different welded and riveted joints structure and able to apply its knowledge to analyze its strength when subjected to simple, coplanar and eccentric loading.
257	BTMEPCC505	Principles of Management	<ul style="list-style-type: none"> <li>• To understand the principles of management and their application to the functioning of an Organization</li> <li>• To provide them tools and techniques to be used in the performance of the managerial job.</li> <li>• To enable them to analyze and understand the environment of the organization.</li> </ul>	CO1: Understand the concepts related to Business. CO2: Demonstrate the roles, skills and functions of management. CO3: Analyze effective application of PPM knowledge to diagnose and solve organizational problems and develop optimal managerial decisions. CO4: Understand the complexities associated with management of human resources in the organizations and integrate the learning in handling these complexities.
258	BTMEPEC506.A	Steam Engineering	<ul style="list-style-type: none"> <li>• To understand the construction of various parts of steam plants.</li> <li>• To understand the working principle of various parts steam generation</li> </ul>	CO1: Determine the efficiency and output of a modern Rankine cycle steam power plant from given data, including superheat, reheat, regeneration, and irreversibility's CO2: Calculate the heat rate, fan power consumption, flame temperature and combustion air requirements of conventional steam generators (boilers). CO3: Select the heat transfer tubes needed for condensers and feed water heaters CO4: Explain the blade shapes, and calculate work output of typical turbine stages. CO5: Calculate the performance of gas turbines with reheat and regeneration, and discuss the performance of combined cycle power plants.

## Course Outcomes

S. No.	Course Code	Course Title	Course Objective	Expected Outcome
259	BTMEPEC506.B	Automobile Engineering	<ul style="list-style-type: none"> <li>• To understand the construction of various parts of an automobile</li> <li>• To understand the working principle of various parts of an automobile</li> </ul>	CO1: Recognize the different parts of the automobile CO2: Explain the working of various parts like engine, transmission, clutch, brakes CO3: Describe how the steering and the suspension systems operate. CO4: Understand the environmental implications of automobile emissions CO5: Develop a strong base for understanding future developments in the automobile industry
260	BTMEPEC506.C	Non Destructive Evaluation & Testing	<ul style="list-style-type: none"> <li>• To understand the non destructive evaluation.</li> <li>• To understand the working principle of various parts of testing</li> </ul>	CO1: Select an appropriate NDT technique as per requirement. CO2: Set various process parameters and control the NDT process for the desired output parameters. CO3: Find the internal flaws in the material by NDT and take measures to eliminate them. CO4: Understand and solve various problems encountered like leakage, cracks, blowholes etc with the manufacturing process by analyzing the data. CO5: competent enough to make use of modern tools and software's for analyzing and solving real life problems.
261	BTMEPCC507	Mechatronics Lab	<ul style="list-style-type: none"> <li>• To understand the synergistic concept of mechanical and electronic systems.</li> <li>• To understand and gain knowledge of different Mechatronics systems.</li> </ul>	CO1: Analyze the velocity and direction of fluid power circuit with the help of simulation software. CO2: Study and demonstrate the fluid power circuits using PLC CO3: Observe interface between stepper motor and 8051 micro controller CO4: Simulate the basic electric, hydraulic and pneumatic system using simulation software.

## Course Outcomes

S. No.	Course Code	Course Title	Course Objective	Expected Outcome
262	BTMEPCC508	Heat Transfer Lab	<ul style="list-style-type: none"> <li>• To provide the practical exposure to the students with regard to the determination of amount of heat exchange in various modes of heat transfer including condensation &amp; boiling for several geometries.</li> <li>• To get knowledge of heat exchange for plane, cylindrical &amp; spherical geometries and ability to compare the performance of extended surfaces and heat exchangers</li> </ul>	CO1: Understand the basic laws of heat transfer. CO2: Understand the consequence of heat transfer in thermal analyses of engineering systems. CO3: Analyze problems involving steady state heat conduction in simple geometries. CO4: Develop solutions for transient heat conduction in simple geometries. CO5: Understand the fundamentals of convective heat transfer process. i.e. Natural, forced and mixed convection in various type of flow. i.e. internal and external flow.
263	BTMEPCC509	Production Engineering Lab	<ul style="list-style-type: none"> <li>• To know about tool life, MRR, Cutting forces and surface finish in different machining process</li> <li>• To understand different types of strength test</li> </ul>	CO1: Define metal cutting operations in machine tools like lathe, drilling, milling, grinding, shaping, and planning, hobbing. CO2: Understand and describe various machine tools and equipment for manufacturing CO3: Make various threads CO4: Understand the concept of patterns.
264	BTMEPCC510	Machine Design Practice Lab	<ul style="list-style-type: none"> <li>• To understand procedure of machine design and develop an ability to apply it for Cotter Joint Design and Knuckle Joint Design etc.</li> <li>• To acquire a skill of design and drafting the Bolted joint, Coupling, Cotter joint , Knuckle Joint etc. by using CAD software</li> </ul>	CO1: Apply the knowledge of Design Data Hand Book and ISO standards for selection of materials, strengths, standard dimensions of design components. CO2: Apply design and drafting knowledge of CAD software for drafting assembly and details of Bolted joint, Coupling, Cotter joint, Knuckle Joint etc. CO3: Develop Logical and Analytical ability to apply Knowledge of CAD for design of Shaft subjected to direct and combined loading CO4: Apply skill of design and drafting CAD software for standard welded and riveted joint as per ISO standard. Apply the design knowledge and formulation for safe design CO5: Apply design procedure for finding the maximum force the given power screw can lift and able to draft and design on CAD software and compare it with analytical results

## Course Outcomes

S. No.	Course Code	Course Title	Course Objective	Expected Outcome
265	BTMEPSIT511	Industrial Training/ Seminar	<ul style="list-style-type: none"> <li>• To acquire and apply fundamental principles of engineering.</li> <li>• To update with all the latest changes in technological world.</li> <li>• To identify, formulate and model problems and find engineering solution based on a systems approach.</li> </ul>	<p>CO1: Capability to acquire and apply fundamental principles of engineering.</p> <p>CO2: Become master in one's specialized technology</p> <p>CO3: Become updated with all the latest changes in technological world.</p> <p>CO4: Ability to identify, formulate and model problems and find engineering solution based on a systems approach.</p>
266	BTMESODECA512	Social Outreach, Discipline & Extra Curricular Activates	<ul style="list-style-type: none"> <li>• To allowing students to explore strengths and talents outside of academics.</li> <li>• To helping students develop stronger time-management and organizational skills.</li> <li>• To giving students the opportunity to build friendships and participate in group activities outside of the tight circle of the regular classroom.</li> <li>• To helping to build confidence and self-esteem.</li> </ul>	<p>CO1: Develop their self-confidence, leadership qualities, and their responsibilities towards the community.</p> <p>CO2: Have an impact on academic development, personal development, and civic responsibility</p> <p>CO3: Understand the value of Social Work.</p> <p>CO4: Understand the Significance of Discipline in student's Life</p> <p>CO5: Contribute towards in social up-gradation by social organization like, Art of Living, Yoga etc., Blood donation, Awareness programs, personality development programs.</p>
267	BTMEPCC601	Measurement & Metrology	<ul style="list-style-type: none"> <li>• To understand procedure and importance of measurement in engineering</li> <li>• To acquire skills of various measuring tools.</li> </ul>	<p>CO1: Understand the basic measurement units and calibrate various measuring devices</p> <p>CO2: Observe error and correction factors of various measuring devices.</p> <p>CO3: Use load measurement system.</p> <p>CO4: Understand the thermocouple wire and its uses</p> <p>CO5: Understand the Capacitance, resistance and inductance.</p>

## Course Outcomes

S. No.	Course Code	Course Title	Course Objective	Expected Outcome
268	BTMEPCC602	Computer Integrated Manufacturing Systems	<ul style="list-style-type: none"> <li>• To understand procedure of integration between different manufacturing modules</li> <li>• To acquire skills of design and drafting different aspect of production in digital era</li> </ul>	<p>CO1. Identify key decision areas for operating managers and researchers for design of production planning &amp; control systems</p> <p>CO2. Adapt competitive priorities and manufacturing strategies for a given production system to derive strategic advantage.</p> <p>CO3. Apply ROP, MRP and JIT systems for inventory control in production systems.</p> <p>CO4. Design push and pull systems using the principles of factory dynamics.</p> <p>CO5. Design factory systems for shop floor control, production scheduling, aggregate planning and capacity planning.</p>
269	BTMEPCC603	Mechanical Vibrations	<ul style="list-style-type: none"> <li>• To formulate mathematical models of problems in vibrations using Newton's second law or energy principles,</li> <li>• To determine solutions to the modeled mechanical vibration problems.</li> <li>• To correlate results from the mathematical model to physical characteristics of the actual system.</li> <li>• To design of a mechanical system using fundamental principles developed in the class.</li> </ul>	<p>CO1: Determine the equations of motion for free-body diagrams.</p> <p>CO2: Construct the governing differential equation and its solution for a vibrating mass subjected to an arbitrary force</p> <p>CO3: Examine any periodic function into a series of simple harmonic motions using Fourier series analysis.</p> <p>CO4: Solve for the motion and the natural frequency for forced vibration of a single degree of freedom damped or undamped system.</p> <p>CO5: Solve vibration problems that contain multiple degrees of freedom.</p>
270	BTMEPCC604	Design of Machine Elements-II	<ul style="list-style-type: none"> <li>• To understand design procedures for mechanical power transmission components</li> <li>• To study power transmitting and power controlling elements</li> </ul>	<p>CO1: Get Knowledge of Fatigue Considerations in Design</p> <p>CO2: Understand Pre loading of bolts.</p> <p>CO3: Describe about design of helical compression, tension &amp; torsional springs</p> <p>CO4: Understand springs under variable stresses.</p> <p>CO5: Examine design of gear teeth, Design of sliding &amp; journal bearing</p>

## Course Outcomes

S. No.	Course Code	Course Title	Course Objective	Expected Outcome
271	BTMEPCC605	Quality Management	<ul style="list-style-type: none"> <li>• To understand total quality management principles and processes</li> <li>• To impart knowledge to develop a product with the required quality at a reasonable price and to satisfy the requirements under various quality standards</li> </ul>	CO1: Use the tools and techniques of TQM in manufacturing and service sectors. CO2: Select appropriate quality tools to be applied for specific situations to meet industrial requirements. CO3: Plan industries according to the various National and International quality standards. CO4: Use the Quality Function Development
272	BTMEPEC606.A	Refrigeration & Air Conditioning	<ul style="list-style-type: none"> <li>• To understand concept of refrigeration</li> <li>• To impart knowledge to develop a product with the required quality for air conditioning</li> </ul>	CO1: Illustrate the fundamental principles and applications of refrigeration and air conditioning system CO2: Obtain cooling capacity and coefficient of performance by conducting test on vapour compression refrigeration systems CO3: Present the properties, applications and environmental issues of different refrigerants CO4: Calculate cooling load for air conditioning systems used for various CO5: Operate and analyze the refrigeration and air conditioning systems.
273	BTMEPEC606.B	Non Conventional Machining Methods	<ul style="list-style-type: none"> <li>• To understand unconventional techniques and processes of manufacturing</li> <li>• To impart knowledge to develop a product with the required quality at a reasonable price and to satisfy the requirements under various quality standards</li> </ul>	CO1: Understand Non-Conventional sources of energy technologies CO2: Understand various renewable energy technologies and systems. CO3: Classify storage technologies from the autonomous renewable energy sources CO4: Understand various possible mechanisms about renewable energy projects
274	BTMEPEC606.C	Micro Electro and Mechanical Systems (MEMS) and Microsystems	<ul style="list-style-type: none"> <li>• To understand different aspects of microelectromechanical Systems.</li> <li>• To familiarize the working of microsystem design and fabrication</li> <li>• To expose the principles of thermo fluid engineering</li> </ul>	CO1: Design MEMS components. CO2: Explain the various MEMS fabrication technologies. CO3: Describe the mechanical, thermal, electrical, magnetic and chemical properties of material. CO4: Discuss the lumped modeling of systems and transducers. CO5: Interpret the micro system dynamics.\

## Course Outcomes

S. No.	Course Code	Course Title	Course Objective	Expected Outcome
275	BTMEPCC607	CIMS Lab	<ul style="list-style-type: none"> <li>• To introduce different concepts of part programming.</li> <li>• To understand the working of computer numerical control.</li> </ul>	<p>CO1: Apply knowledge about Computer Aided Quality control and Process Planning Control.</p> <p>CO2: Design Flexible manufacturing cell after carrying out Group technology study and finally creating FMS.</p> <p>CO3: Apply knowledge about various methods of communication in CIMS.</p> <p>CO4: Apply data management and its importance for decision making in CIMS environment.</p>
276	BTMEPCC608	Vibration Lab	<ul style="list-style-type: none"> <li>• To understand measurement and analysis techniques of mechanical vibration systems</li> <li>• To formulate mathematical models of problems in vibrations using Newton's second law or energy principles</li> </ul>	<p>CO1: Use frequency and time domain measurement systems and analysis techniques for vibrational systems.</p> <p>CO2: Construct the equations of motion for free-body diagrams.</p> <p>CO3: Solve for the motion and the natural frequency of a freely vibrating single degree of freedom undamped motion</p> <p>CO4: Construct the governing differential equation and its solution for a vibrating mass subjected to an arbitrary force.</p> <p>CO5: Solve for the motion and the natural frequency for forced vibration of a single degree of freedom damped or undamped system.</p>
277	BTMEPCC609	Machine Design Practice II Lab	<ul style="list-style-type: none"> <li>• To apply measurement and analysis techniques to mechanical compression and tension systems</li> <li>• To formulate mathematical models and design transmission systems.</li> </ul>	<p>CO1: Understand Fatigue loading and tension in different springs.</p> <p>CO2: Understand bolts subjected to variable stresses.</p> <p>CO3: Understand Sliding contact bearing design and Anti-friction bearing selection its applications.</p>
278	BTMEPCC610	Thermal Engineering Lab	<ul style="list-style-type: none"> <li>• To understand otto and diesel engine technology</li> <li>• To understand fundamentals of thermodynamics in internal combustion engines.</li> </ul>	<p>CO1: Compute the property of fuels and lubricating oils using suitable tests.</p> <p>CO2: Demonstrate the performance of internal combustion engines and air compressors</p> <p>CO3: Interpret the emission characteristics of internal combustion engines</p>

## Course Outcomes

S. No.	Course Code	Course Title	Course Objective	Expected Outcome
279	BTMEPSIT611	Industrial Training/ Seminar	<ul style="list-style-type: none"> <li>• To acquire and apply fundamental principles of engineering.</li> <li>• To update with all the latest changes in technological world.</li> <li>• To identify, formulate and model problems and find engineering solution based on a systems approach.</li> </ul>	<p>CO1: Capability to acquire and apply fundamental principles of engineering.</p> <p>CO2: Become master in one's specialized technology</p> <p>CO3: Become updated with all the latest changes in technological world.</p> <p>CO4: Ability to identify, formulate and model problems and find engineering solution based on a systems approach.</p>
280	BTMESODECA612	Social Outreach, Discipline & Extra Curricular Activates	<ul style="list-style-type: none"> <li>• To allowing students to explore strengths and talents outside of academics.</li> <li>• To helping students develop stronger time-management and organizational skills.</li> <li>• To giving students the opportunity to build friendships and participate in group activities outside of the tight circle of the regular classroom.</li> <li>• To helping to build confidence and self-esteem.</li> </ul>	<p>CO1: Develop their self-confidence, leadership qualities, and their responsibilities towards the community.</p> <p>CO2: Have an impact on academic development, personal development, and civic responsibility</p> <p>CO3: Understand the value of Social Work.</p> <p>CO4: Understand the Significance of Discipline in student's Life</p> <p>CO5: Contribute towards in social up-gradation by social organization like, Art of Living, Yoga etc., Blood donation, Awareness programs, personality development programs.</p>
281	BTMEPEC701.A	I.C. Engines	<ul style="list-style-type: none"> <li>• To familiarize with the terminology associated with IC engines.</li> <li>• To understand the basics of IC engines.</li> <li>• To understand combustion, and various parameters and variables affecting it in various types of IC engines.</li> <li>• To learn various systems used in IC engines and the type of IC engine required for various applications</li> </ul>	<p>CO1: Understand various types of I.C. Engines and Cycles of operation.</p> <p>CO2: Analyze the effect of various operating variables on engine performance</p> <p>CO3: Identify fuel metering and fuel supply systems for different types of engines</p> <p>CO4: Understand normal and abnormal combustion phenomena in SI and CI engines</p> <p>CO5: Evaluate performance Analysis of IC Engine and justify the suitability of IC Engine for Different application</p>

## Course Outcomes

S. No.	Course Code	Course Title	Course Objective	Expected Outcome
282	BTMEPEC701.B	Operation Research	<ul style="list-style-type: none"> <li>• To familiarize with the terminology associated with operation research.</li> <li>• To understand the basics of optimization.</li> </ul>	<p>CO1: Understand the application of OR and frame a LP Problem with solution – graphical and through solver add in excel (software)</p> <p>CO2: Build and solve Transportation and Assignment problems using appropriate method.</p> <p>CO3: Design and solve simple models of CPM and queuing to improve decision making and develop critical thinking and objective analysis of decision problems</p> <p>CO4: Solve simple problems of replacement and implement practical cases of decision making under different business environments.</p> <p>CO5: Best course of action out of several alternative courses for the purpose of achieving objectives by applying game theory and sequencing models.</p>
283	BTMEPEC701.C	Turbomachines	<ul style="list-style-type: none"> <li>• To introduce the means by which the energy transfers is achieved in the main types of turbomachines and the different behaviors of individual types in operation.</li> <li>• To understand the basics of turbo engines.</li> </ul>	<p>CO1: Recognize typical designs of turbo machines and differentiate from positive displacement machines</p> <p>CO2: Explain the working principles of turbo machines and apply it to various types of machines</p> <p>CO3: form the preliminary design of turbo machines (pumps, compressors, turbines) on a 1-D basis</p> <p>CO4: Determine the off-design behavior of turbines and compressors and relate it to changes in the velocity triangles</p> <p>CO5: Recognize relations between choices made early in the turbo machinery design process and the final components and operability.</p>
284	BTMEOEC702.A	Non Destructive System	<ul style="list-style-type: none"> <li>• To familiarize with the different testing machines.</li> <li>• To understand the basics of non destructive tastings.</li> </ul>	<p>CO1: Understand various theories of testing process and machines</p> <p>CO2: Describe NDT in quality assurance</p> <p>CO3: Interpret Visual Inspection</p> <p>CO4: Understand radiographic testing</p> <p>CO5: Understand penetrate testing</p>

## Course Outcomes

S. No.	Course Code	Course Title	Course Objective	Expected Outcome
285	BTMEOEC702.B	Environmental Engineering and Disaster Management	<ul style="list-style-type: none"> <li>• To understand the basics of different disasters.</li> <li>• To understand the basics of different tools and methods for disaster management.</li> </ul>	CO1: Understand Disasters, man-made Hazards and Vulnerabilities CO2: Understand disaster management mechanism CO3: Understand capacity building concepts and planning of disaster managements
286	BTMEOEC702.C	Power Generation Sources	<ul style="list-style-type: none"> <li>• To understand different types of power plant engineering.</li> <li>• To familiarize with the working of power plants based on different fuels.</li> </ul>	CO1: Understand basic knowledge of Different types of Power Plants and site selection CO2: Design ash handling and coal handling methods in a the thermal power plant. CO3: Calculate performance of thermal power plant. CO4: Understand the working of Hydroelectric and Nuclear power plant CO5: Understand the working of Diesel & Gas Turbine Power plant
287	BTMEPCC703	FEA Lab	<ul style="list-style-type: none"> <li>• To understand the importance of automation for problem solving</li> <li>• To get the knowledge of various finite elements methodsbased on software's</li> </ul>	CO1: Demonstrate the ability to create models for trusses, frames, plate structures, machine parts, and components using ANSYS general-purpose software CO2: Examine model multi-dimensional heat transfer problems using ANSYS; CO3: Demonstrate the ability to evaluate and interpret FEA analysis results for design and evaluation purposes. CO4: Understand the limitations of the FE method and understand the possible error sources in its use.
288	BTMEPCC704	Thermal Engineering Lab-II	<ul style="list-style-type: none"> <li>• To understand the importance of balancing efficiencies in different engines and systems.</li> <li>• To get the knowledge of various elements COPs</li> </ul>	CO1: Demonstrate conduction, convection and radiation heat transfer through experiments. CO2: Interpret heat transfer enhancement mechanisms. CO3: Estimate the size and type of heat exchangers. CO4: Calculate the cooling load of air conditioning systems and cooling towers.
289	BTMEPCC705	Quality Control Lab	<ul style="list-style-type: none"> <li>• To facilitate the understanding of various industrial engineering working tools.</li> <li>• To impart knowledge to develop a product within the range of acceptance</li> </ul>	CO1: Make a system, component, or process to meet desired needs within realistic constraints CO2: Identify the control charts. CO3: Draw and calculate the different charts and diagrams. CO4: Define standard deviations.

## Course Outcomes

S. No.	Course Code	Course Title	Course Objective	Expected Outcome
290	BTMEPSIT706	Industrial Training	<ul style="list-style-type: none"> <li>• To acquire and apply fundamental principles of engineering.</li> <li>• To identify, formulate and present model problems.</li> <li>• To identify, formulate and model problems and find engineering solution based on a systems approach.</li> </ul>	<p>CO1: Capability to acquire and apply fundamental principles of engineering.</p> <p>CO2: Become master in one's specialized technology</p> <p>CO3: Become updated with all the latest changes in technological world.</p> <p>CO4: Ability to identify, formulate and model problems and find engineering solution based on a systems approach.</p>
291	BTMEPSIT707	Seminar	<ul style="list-style-type: none"> <li>• To Awareness of how to use values in improving your own professionalism.</li> <li>• To Learning about personal and communication styles for team building.</li> <li>• To identify, formulate and present model problems.</li> <li>• To Learning management of values.</li> </ul>	<p>CO1: Personalize and create a communication style for individual &amp; team building.</p> <p>CO2: Use values in improving one's own professionalism</p> <p>CO3: Develop the higher cognitive abilities that are analysis, synthesis and evaluation.</p> <p>CO4: Ability to identify, formulate and present model problems.</p>
292	BTMESODECA708	Social Outreach, Discipline & Extra Curricular Activity	<ul style="list-style-type: none"> <li>• To allowing students to explore strengths and talents outside of academics.</li> <li>• To helping students develop stronger time-management and organizational skills.</li> <li>• To giving students the opportunity to build friendships and participate in group activities outside of the tight circle of the regular classroom.</li> <li>• To helping to build confidence and self-esteem.</li> </ul>	<p>CO1: Develop their self-confidence, leadership qualities, and their responsibilities towards the community.</p> <p>CO2: Have an impact on academic development, personal development, and civic responsibility</p> <p>CO3: Understand the value of Social Work.</p> <p>CO4: Understand the Significance of Discipline in student's Life</p> <p>CO5: Contribute towards in social up-gradation by social organization like, Art of Living, Yoga etc., Blood donation, Awareness programs, personality development programs.</p>

## Course Outcomes

S. No.	Course Code	Course Title	Course Objective	Expected Outcome
293	BTMEPEC801.A	Hybrid and Electric Vehicles	<ul style="list-style-type: none"> <li>• To Explain the basics of electric and hybrid electric vehicles, their architecture, technologies and fundamentals.</li> <li>• To understand and discuss different energy storage technologies used for hybrid electric vehicles and their control.</li> <li>• To analyze various electric drives suitable for hybrid electric vehicles.</li> </ul>	<p>CO1: Explain the basics of electric and hybrid electric vehicles, their architecture, technologies and fundamentals.</p> <p>CO2: Analyze the use of different power electronics devices and electrical machines in hybrid electric vehicles</p> <p>CO3: Explain the use of different energy storage devices used for hybrid electric vehicles, their technologies and control and select appropriate technology</p> <p>CO4: Interpret working of different configurations of electric vehicles and its components, hybrid vehicle configuration, performance analysis and Energy Management strategies in HEVs.</p> <p>CO5: Discuss different energy storage technologies used for hybrid electric vehicles and their control.</p>
294	BTMEPEC801.B	Supply and Operations Management	<ul style="list-style-type: none"> <li>• To develop an understanding of how the operations, have strategic importance and can provide a competitive advantage in the workplace.</li> <li>• To understand the relationship between operations and other business functions.</li> <li>• To understand techniques of location and facility planning; line balancing; job designing; and capacity planning in operations management.</li> <li>• To understand the Materials Management function starting from Demand Management through Inventory Management.</li> </ul>	<p>CO1: Identify the elements of operations management and various transformation processes to enhance productivity and competitiveness.</p> <p>CO2: Analyze and evaluate various facility alternatives and their capacity decisions, develop a balanced line of production &amp; scheduling and sequencing techniques in operation environments</p> <p>CO3: Develop aggregate capacity plans and MPS in operation environments.</p> <p>CO4: Plan and implement suitable materials handling principles and practices in the operations.</p> <p>CO5: Plan and implement suitable quality control measures in Quality Circles to TQM.</p>

## Course Outcomes

S. No.	Course Code	Course Title	Course Objective	Expected Outcome
295	BTMEPEC801.C	Additive Manufacturing	<ul style="list-style-type: none"> <li>• To understand technology used in additive manufacturing.</li> <li>• To understand importance of additive manufacturing in advance manufacturing process.</li> <li>• To acquire knowledge, techniques and skills to select relevant additive manufacturing process.</li> <li>• To explore the potential of additive manufacturing in different industrial sectors.</li> </ul>	CO1: Apply conceptual design and geometric transformation techniques in rapid prototyping. CO2: Know about STL system and STL fusion deposition modeling. CO3: Identify solid ground curing methods and rapid tooling methods. CO4: Determine direct rapid tooling processes and their emerging trends. CO5: Compute Additive Manufacturing Process for optimum part quality.
296	BTMEOEC802.A	Finite Elements Methods	<ul style="list-style-type: none"> <li>• To introduce the concepts of Mathematical Modeling of Engineering Problems.</li> <li>• To appreciate the use of FEM to a range of Engineering Problems</li> <li>• To analyze a physical problem, develop experimental procedures for accurately investigating the problem, and effectively perform and document findings.</li> </ul>	CO1: Understand different mathematical techniques used in FEM analysis. CO2: Understand the stress and strain role and significance of shape functions in finite element formulations and use linear, quadratic functions for interpolation. CO3: Understand the concepts of Nodes and elements. CO4: Understand use of FEA in Structural and thermal problem CO5: Understand the application of FEA in heat transfer problem CO6: Learn finite element modeling techniques
297	BTMEOEC802.B	Energy Management	<ul style="list-style-type: none"> <li>• To identify the energy management skills and strategies in the energy management system.</li> <li>• To understand various energy conservation methods useful in a particular industry.</li> <li>• To prepare an energy audit report.</li> </ul>	CO1: Identify the scope and outcome of energy management. CO2: Understand energy demand management and conservation of energy. CO3: Understand need of energy management in industry, transport and buildings. CO4: Know about energy forecasting techniques and energy integration and matrix. CO5: Evaluate the techno economic feasibility of the energy conservation technique adopted.

## Course Outcomes

S. No.	Course Code	Course Title	Course Objective	Expected Outcome
298	BTMEOEC802.C	Waste and By-product Utilization	<ul style="list-style-type: none"> <li>• To understand the type of waste and by products, waste identification, classification and composition.</li> <li>• To know the need for waste treatment and utilization</li> </ul>	<p>CO1: Identify various waste from food industries and understand their characteristics</p> <p>CO2: Understand various methods of waste treatment.</p> <p>CO3: Understand various by products from food industry waste</p> <p>CO4: Apply knowledge for a functional ETP plant to suit requirement.</p> <p>CO5: Understand aspects related to food waste disposal.</p>
299	BTMEPCC803	Industrial Engineering Lab	<ul style="list-style-type: none"> <li>• To understand the various industrial engineering working tools and their uses.</li> <li>• To impart knowledge to develop a product within the range of acceptance.</li> </ul>	<p>CO1: Evaluate and design a system, component, or process to meet desired needs within realistic constraints</p> <p>CO2: Identify the control charts.</p> <p>CO3: Draw and calculate the different charts and diagrams.</p> <p>CO4: Identify the standard deviations.</p>
300	BTMEPCC804	Metrology Lab	<ul style="list-style-type: none"> <li>• To Measure linear and angular dimensions</li> <li>• To perform various alignment tests on machine tools</li> <li>• To Measure the pressure, flow, speed, displacement and temperature.</li> </ul>	<p>CO1: Demonstrate the use of instruments for measuring linear (internal and external), angular dimensions and surface roughness.</p> <p>CO2: Perform alignment tests on various machine tools.</p> <p>CO3: Demonstrate the use of instruments for measuring pressure, flow, speed, displacement and temperature</p> <p>CO4: Calibrate the Bourdon tube pressure gauge</p>
301	BTMEPSIT805	Project	<ul style="list-style-type: none"> <li>• To introduce the concept and methods required for the construction of large software intensive system.</li> <li>• To develop a broad understanding of the discipline of software engineering and management of software system.</li> <li>• To provide an understanding of both theoretical and methodological issues involved in modern software engineering project management and focus strongly on practical techniques.</li> </ul>	<p>CO1: Capability to acquire and apply fundamental principles of engineering.</p> <p>CO2: Be a multi-skilled engineer with good technical knowledge, management, leadership and entrepreneurship skills.</p> <p>CO3: Identify, formulate and model problems and find engineering solution based on a systems approach.</p> <p>CO4: Capability and enthusiasm for self-improvement through continuous professional development and life-long learning</p>

## Course Outcomes

S. No.	Course Code	Course Title	Course Objective	Expected Outcome
302	BTMESODECA806	Social Outreach, Discipline & Extra Curricular Activity	<ul style="list-style-type: none"> <li>• To allowing students to explore strengths and talents outside of academics.</li> <li>• To helping students develop stronger time-management and organizational skills.</li> <li>• To giving students the opportunity to build friendships and participate in group activities outside of the tight circle of the regular classroom.</li> <li>• To helping to build confidence and self-esteem.</li> </ul>	CO1: Develop their self-confidence, leadership qualities, and their responsibilities towards the community. CO2: Have an impact on academic development, personal development, and civic responsibility CO3: Understand the value of Social Work. CO4: Understand the Significance of Discipline in student's Life CO5: Contribute towards in social up-gradation by social organization like, Art of Living, Yoga etc., Blood donation, Awareness programs, personality development programs.
303	BTBSC 101	Engineering Mathematics-I	<ul style="list-style-type: none"> <li>• To familiarize the prospective engineers with techniques in calculus, multivariate analysis and linear algebra.</li> <li>• To equip the students with standard concepts and tools at an intermediate to advanced level</li> <li>• To understand Fourier series representation of Periodic signals and to introduce with Fourier Series.</li> </ul>	CO1: Understand the calculation and Applications of definite integrals. CO2: Solve problems related to Sequences and Series. CO3: Interpret the concept of s series as the sum of a sequence and able to solve problems related to Fourier series. CO4: Interpret the concept of s series as the sum of a sequence and use the sequence of partial sums to determine divergence of a series. CO5: Understand the calculation and Applications of Multivariable integrals.
304	BTBSC 102	Engineering Physics	<ul style="list-style-type: none"> <li>• To understand the concepts of interference, Diffraction and Polarization.</li> <li>• To know about wave particle duality.</li> <li>• To know applications of Optical fibre.</li> <li>• To know applications of Lasers in Science, engineering and medicine.</li> <li>• To know classification of Solid.</li> </ul>	CO1: Enhance the basic skills required to understand, develop, and design various engineering applications involving Wave Optics. CO2: Understand Quantum Mechanics and apply them to diverse engineering problems. CO3: Analyze the nature of light propagation in guided medium for engineering applications and study in Coherence and Optical Fibers. CO4: Describe different Laser problems. CO5: Describe Material Science & Semiconductor Physics.

## Course Outcomes

S. No.	Course Code	Course Title	Course Objective	Expected Outcome
305	BTHSMC 103	Communication Skills	<ul style="list-style-type: none"> <li>• To improve communication skills with Basic English.</li> <li>• To know different types of communication.</li> <li>• To develop basic skills needed for writing short stories and poems.</li> </ul>	CO1: Understand Communication and Types of Communication. CO2: Know Grammar of Passive Voice, Reported Speech. CO3: Understand different ways of writing Job Application and Curriculum-Vitae. CO4: Describe different Short Stories for effective Learning. CO5: Describe different poems for improving communication skills.
306	BTESC 104	Programming for Problem Solving	<ul style="list-style-type: none"> <li>• To learn the fundamentals of computers.</li> <li>• To understand the various steps in program development.</li> <li>• To learn the syntax and semantics of C programming language.</li> <li>• To learn the usage of structured programming approach in solving problems.</li> </ul>	CO1: Know and understand the conventions of Fundamentals of Computer. CO2: Represent algorithms through flowchart and pseudo code. CO3: Learn Number system and apply these skills in developing new products. CO4: Understand and learn C Programming. CO5: Comprehend the Development of C programs using- Arrays, functions.
307	BTESC 105A	Basic Electrical Engineering	<ul style="list-style-type: none"> <li>• To Understand the basic concept of Electrical engineering instruments for engineering applications.</li> <li>• To Understand the basic electrical engineering parameters and their importance.</li> <li>• To Understand the concept of various laws and principles associated with electrical systems.</li> <li>• To Develop the knowledge to apply concepts in the field of electrical engineering, projects and research.</li> </ul>	CO1: Apply basic skills for designing various instruments for engineering applications. CO2: Determine error in laboratory measurements and techniques used to minimize such error. CO3: Gain knowledge regarding the various laws and principles associated with electrical systems. CO4: Understand electrical machines and apply them for practical problems. CO5: Understand the concepts in the field of electrical engineering, projects and research.
308	BTESC 105B	Basic Civil Engineering	<ul style="list-style-type: none"> <li>• To inculcate the essentials of Civil Engineering field to the students of all branches of Engineering.</li> <li>• To provide students the significance of the Civil Engineering Profession in satisfying societal needs.</li> </ul>	CO1: Illustrate the fundamental aspects of Civil Engineering. CO2: Understand the scope of civil engineering. CO3: Explain the concepts of surveying for making horizontal and vertical measurements. CO4: Describe plan and set out of a building, also illustrate the uses of various building materials and explains the method of construction of different components of a building. CO5: Understand the modes of Traffic and Road Safety and Road Safety Measures

## Course Outcomes

S. No.	Course Code	Course Title	Course Objective	Expected Outcome
309	BTBSC 106	Engineering Physics Lab	<ul style="list-style-type: none"> <li>• To understand the concepts of interference.</li> <li>• To know about wavelength of light.</li> <li>• To know about depletion layer and band gap of semiconductor.</li> <li>• To know dispersion of light through prism.</li> <li>• To know principle of Hall Effect.</li> </ul>	CO1: Understand the usage of common Ammeter, voltmeter and Multimeter. CO2: Formulate and solve complex AC, DC circuits. CO3: Understand the usage of common electrical measuring instruments. CO4: Identify the type of electrical machine used for that particular application. CO5: Understand the usage of optical instruments.
310	BTHSMC 107	Language Lab	<ul style="list-style-type: none"> <li>• To understand concepts of basic English language fundamentals.</li> <li>• To understand the communication skills.</li> <li>• To develop Dialogue Writing and Listening comprehension.</li> </ul>	CO1: Understand the Phonetic Symbols and Transcriptions. CO2: Understand the skills required in Extempore. CO3: Improve their communication skills for Group Discussion. CO4: Improve their technical communication skills. CO5: Understand Dialogue Writing and Listening skills.
311	BTESC 108	Computer Programming Lab	<ul style="list-style-type: none"> <li>• To understand the various steps in program development.</li> <li>• To learn the syntax and semantics of C programming language.</li> <li>• To learn the usage of structured programming approach in solving problems.</li> </ul>	CO1: Learn about the C Library, Preprocessor directive, Input-output statement. CO2: Learn data type, variables, and conditional statement. CO3: Learn about array and string operations. CO4: Understand File handling operations. CO5: Learn programs related to C Programming and apply them to solve real world problems.
312	BTESC109A	Basic Electrical Engineering Lab	<ul style="list-style-type: none"> <li>• To understand training on different trades like Fitting, Carpentry and Casting</li> <li>• To learn various joints are made using wood and other metal pieces.</li> <li>• To develop machining skills in students.</li> </ul>	CO1. Adapt knowledge regarding the various laws and principles associated with electrical systems. CO2: Adapt knowledge regarding electrical machines and apply them for practical problems. CO3: Understand various types' Electrical Equipments. CO4: Understanding digital measuring equipments.
313	BTESC109B	Basic Civil Engineering Lab	<ul style="list-style-type: none"> <li>• To Introduce The Various Activities Regarding Measurement And Leveling</li> <li>• To Water Supply Procedure And Various Discharge And Pressure Measuring Apparatuses</li> </ul>	CO1: Conduct survey and collect field data. CO2: Review field notes from survey data. CO3: Interpret survey data and compute areas and volumes. CO4: Describe Total station and measurement CO5: Describe various water fittings and find out the various fluids properties

## Course Outcomes

S. No.	Course Code	Course Title	Course Objective	Expected Outcome
314	BTESC 110	Computer Aided Engineering Graphics	<ul style="list-style-type: none"> <li>• To Increase ability to communicate with people</li> <li>• To Learn to sketch and take object dimensions.</li> <li>• To Learn to take data and transform it into graphic drawings.</li> </ul>	<p>CO1: Know and understand the conventions and the method of engineering drawing.</p> <p>CO2: Interpret engineering drawings using fundamentals of different views to construct basic and intermediate geometry.</p> <p>CO3: Know the Theory of sectioning and Section of Solids.</p> <p>CO4: Comprehend the theory of projection.</p> <p>CO5: Improve their drawing skill in the form of Computer Graphics.</p>
315	BTSODECA111	Discipline	<ul style="list-style-type: none"> <li>• To allowing students to explore strengths and talents outside of academics.</li> <li>• To helping students develop stronger time-management and organizational skills.</li> <li>• To giving students the opportunity to build friendships and participate in group activities outside of the tight circle of the regular classroom.</li> <li>• To helping to build confidence and self-esteem.</li> </ul>	<p>CO1: Develop their self-confidence, leadership qualities, and their responsibilities towards the community.</p> <p>CO2: Have an impact on academic development, personal development, and civic responsibility</p> <p>CO3: Understand the value of Social Work.</p> <p>CO4: Understand the Significance of Discipline in student's Life</p> <p>CO5: Contribute towards social up-gradation by social organization like, Art of Living, Yoga etc., Blood donation, Awareness programs, personality development programs.</p>
316	BTBSC 201	Engineering Mathematics-II	<ul style="list-style-type: none"> <li>• To provide detailed of matrices which is applied for solving system of linear equations and useful in various fields of technology.</li> <li>• To understand the course is an introduction to ordinary differential equations.</li> <li>• To understand the collection of methods and techniques used to find solutions to several types of differential equations, including first order scalar equations.</li> </ul>	<p>CO1: Understand the matrices, Rank of a matrix, rank-nullity theorem; System of linear equations.</p> <p>CO2: Identify, analyze and subsequently solve physical situations whose behavior can be described by First order and First degree ordinary differential.</p> <p>CO3: Determine solutions to second order linear differential equations with variable coefficients.</p> <p>CO4: Solve Engineering problems using different methods and techniques.</p> <p>CO5: Evaluate the first order and Second order partial differential equations</p>

## Course Outcomes

S. No.	Course Code	Course Title	Course Objective	Expected Outcome
317	BTBSC 202	Engineering Chemistry	<ul style="list-style-type: none"> <li>• To acquire the knowledge about impurities in water, their determination and purification.</li> <li>• To learn about different types of fuel and lubricant and their applications.</li> <li>• To gain the basic knowledge, applications and control methods of corrosion.</li> <li>• To get the knowledge of preparation and significance of explosives, cement, refractories and glass.</li> <li>• To get the knowledge of organic reaction mechanism and their uses with different types of drugs</li> </ul>	<p>CO1: gain knowledge about impurities in water, their determination and purification.</p> <p>CO2: understand organic fuels and various emerging new areas of organic chemistry.</p> <p>CO3: learn about Corrosion and its control.</p> <p>CO4: Get knowledge about the chemistry of some Engineering Materials like Portland Cement.</p> <p>CO5: understand and study Organic reaction mechanisms.</p>
318	BTHSMC 203	Human Values	<ul style="list-style-type: none"> <li>• To Know the basic guidelines, content and Process for Value Education</li> <li>• To develop understanding different Harmony concept.</li> <li>• To understand professional ethics and natural acceptance of human values.</li> </ul>	<p>CO1: Understand and analyze Basic Guidelines, Content and Process for Value Education.</p> <p>CO2: Understand Harmony in the Human Being - Harmony in Myself.</p> <p>CO3: Understand Harmony in the Family and Society- Harmony in Human-Human Relationship.</p> <p>CO4: Understand Harmony in the Nature and Existence – Whole existence as Coexistence.</p> <p>CO5: Understand of Harmony on Professional Ethics. Natural acceptance of human values.</p>
319	BTESC 204	Basic Mechanical Engineering	<ul style="list-style-type: none"> <li>• To Increase ability to understand machine working</li> <li>• To Learn to understand fundamentals of mechanical systems</li> <li>• To Learn to make different mechanical aspects of engineering</li> </ul>	<p>CO1: Know and understand the Fundamentals of thermal engineering, mechanical machine design, industrial engineering and manufacturing technology.</p> <p>CO2: Understand the Refrigeration and Air Conditioning.</p> <p>CO3: Understand the Applications and working of Reciprocating and Centrifugal pumps.</p> <p>CO4: Know the Transmission of Power through Belt and Rope Drives, Gears.</p> <p>CO5: Understand of Primary Manufacturing Processes.</p>

## Course Outcomes

S. No.	Course Code	Course Title	Course Objective	Expected Outcome
320	BTESC205A	Basic Civil Engineering	<ul style="list-style-type: none"> <li>• To inculcate the essentials of Civil Engineering field to the students of all branches of Engineering.</li> <li>• To provide students the significance of the Civil Engineering Profession in satisfying societal needs.</li> </ul>	CO1: Illustrate the fundamental aspects of Civil Engineering. CO2: Understand the scope of civil engineering. CO3: Explain the concepts of surveying for making horizontal and vertical measurements. CO4: Describe plan and set out of a building, also illustrate the uses of various building materials and explains the method of construction of different components of a building. CO5: Understand the modes of Traffic and Road Safety and Road Safety Measures
321	BTESC205B	Basic Electrical Engineering	<ul style="list-style-type: none"> <li>• To Understand the basic concept of Electrical engineering instruments for engineering applications.</li> <li>• To Understand the basic electrical engineering parameters and their importance.</li> <li>• To Understand the concept of various laws and principles associated with electrical systems.</li> <li>• To Develop the knowledge to apply concepts in the field of electrical engineering, projects and research.</li> </ul>	CO1: Apply basic skills for designing various instruments for engineering applications. CO2: Determine error in laboratory measurements and techniques used to minimize such error. CO3: Gain knowledge regarding the various laws and principles associated with electrical systems. CO4: Understand electrical machines and apply them for practical problems. CO5: Understand the concepts in the field of electrical engineering, projects and research.
322	BTHSMC 206	Advanced English	<ul style="list-style-type: none"> <li>• To Develop basic communication concept for social environment.</li> <li>• To Improve conversation skills to increase confidence and proficiency.</li> <li>• To understand the concept of English in 'real life' situations.</li> <li>• To apply grammar knowledge for growing according to environment.</li> </ul>	CO 1: Understand Communicate in a variety of social, travel and work-related situations CO 2: Understand conversation skills and Widen vocabulary skills CO 3: Apply proficiency in all major skills CO 4: Apply Practice English in 'real life' situations CO 5: Learn how to apply grammar knowledge
323	BTBSC 207	Engineering Chemistry Lab	<ul style="list-style-type: none"> <li>• To understand the method for the determination of hardness in water and purification process.</li> <li>• To understand about different types of volumetric analysis.</li> <li>• To learn about properties of lubricant oil.</li> <li>• To Synthesize a small drug molecule and analyse a salt sample</li> </ul>	CO1: Understand the method for the determination of hardness in water and purification process. CO2: understand about different types of volumetric analysis. CO3: learn about properties of lubricant oil. CO4: Synthesize a small drug molecule and analyse a salt sample

## Course Outcomes

S. No.	Course Code	Course Title	Course Objective	Expected Outcome
324	BTHSMC 208	Human Values Activities	<ul style="list-style-type: none"> <li>• To Understand the basic guidelines, content and process for value education.</li> <li>• To develop understanding different Harmony concept.</li> <li>• To understand professional ethics and natural acceptance of human values.</li> </ul>	<p>CO1: Analyze Basic Guidelines, Content and Process for Value Education.</p> <p>CO2: Understanding Harmony in the Human Being - Harmony in Myself.</p> <p>CO3: Understand Harmony in the Family and Society- Harmony in Human-Human Relationship. Recollect and narrate an incident in your life.</p> <p>CO4: Understand Harmony in the Nature and Existence – Whole existence as Coexistence. Summarize the core message of this course grasped by you.</p> <p>CO5: List and Implicate the above Holistic Understanding of Harmony on Professional Ethics. Natural acceptance of human values.</p>
325	BTESC 209	Manufacturing Practices Workshop	<ul style="list-style-type: none"> <li>• To discuss the modules include training on different trades like Fitting, Carpentry and Casting</li> <li>• To learn various joints are made using wood and other metal pieces.</li> <li>• To develop machining skills in students.</li> </ul>	<p>CO1: Describe cast different parts through Carpentry.</p> <p>CO2: Define control manufacturing via computers.</p> <p>CO3: Understanding use power tools and fitting tools.</p> <p>CO4: Knowledge of various welding operations</p> <p>CO5: Understanding different metallic and non-metallic objects.</p>
326	BTESC210A	Basic Civil Engineering Lab	<ul style="list-style-type: none"> <li>• To Introduce The Various Activities Regarding Measurement And Leveling</li> <li>• To Water Supply Procedure And Various Discharge And Pressure Measuring Apparatuses</li> </ul>	<p>CO1: Conduct survey and collect field data.</p> <p>CO2: Review field notes from survey data.</p> <p>CO3: Interpret survey data and compute areas and volumes.</p> <p>CO4: Describe Total station and measurement</p> <p>CO5: Describe various water fittings and find out the various fluids properties</p>
327	BTESC 210B	Basic Electrical Engineering Lab	<ul style="list-style-type: none"> <li>• To understand training on different trades like Fitting, Carpentry and Casting</li> <li>• To learn various joints are made using wood and other metal pieces.</li> <li>• To develop machining skills in students.</li> </ul>	<p>CO1. Adapt knowledge regarding the various laws and principles associated with electrical systems.</p> <p>CO2: Adapt knowledge regarding electrical machines and apply them for practical problems.</p> <p>CO3: Understand various types' Electrical Equipments.</p> <p>CO4: Understanding digital measuring equipments.</p>

## Course Outcomes

S. No.	Course Code	Course Title	Course Objective	Expected Outcome
328	BTESC 211	Computer Aided Machine Drawing	<ul style="list-style-type: none"> <li>• To design, develop and analyze simple linear and non linear computer based drawing.</li> <li>• To identify and apply the suitable knowledge of computers to understand the shape and size of Drawing Objects.</li> </ul>	CO1: Understand the conventions and the method of engineering drawing. CO2: Interpret engineering drawings using fundamentals of different views to construct basic and intermediate geometry. CO3: Adapt theory of sectioning and Section of Solids. CO4: Classify the theory of projection. CO5: Understand drawing skill in the form of Computer Graphics.
329	BTSODECA212	Social Outreach, Discipline & Extra Curricular Activities	<ul style="list-style-type: none"> <li>• To allowing students to explore strengths and talents outside of academics.</li> <li>• To helping students develop stronger time-management and organizational skills.</li> <li>• To giving students the opportunity to build friendships and participate in group activities outside of the tight circle of the regular classroom.</li> <li>• To helping to build confidence and self-esteem.</li> </ul>	CO1: Develop their self-confidence, leadership qualities, and their responsibilities towards the community. CO2: Have an impact on academic development, personal development, and civic responsibility CO3: Understand the value of Social Work. CO4: Understand the Significance of Discipline in student's Life CO5: Contribute towards in social up-gradation by social organization like, Art of Living, Yoga etc., Blood donation, Awareness programs, personality development programs.
330	BTEEBSC301	Advance Mathematics	<ul style="list-style-type: none"> <li>• To provide students with an introduction to the field of numerical analysis</li> <li>• To Derive appropriate numerical methods to solve interpolation based problems</li> <li>• To determine properties of Fourier Transform which may be solved by application of special functions?</li> <li>• To determine properties of Laplace Transform which may be solved by application of special functions</li> </ul>	CO1: Understand the theoretical and practical aspects of the use of numerical Calculation. CO2: Derive numerical methods for various mathematical operations and tasks, such as interpolation, differentiation, integration, the solution of linear and nonlinear equations, and the solution of differential equations. CO3: Understand integral calculus and special functions of various engineering problem and to known the application of some basic mathematical methods via all these special functions CO4: Classify and explain the functions of different types of differential equations. CO5: Solve a linear system of equations using an appropriate numerical method

## Course Outcomes

S. No.	Course Code	Course Title	Course Objective	Expected Outcome
331	BTEEHSMC302	Managerial Economics and Financial	<ul style="list-style-type: none"> <li>• To discuss economics deals with the application of the economic concepts, theories, tools, and methodologies to solve practical problems in a business.</li> <li>• To the managerial economics is the combination of economics theory and managerial theory.</li> <li>• To helps the manager in decision-making and acts as a link between practice and theory.</li> </ul>	CO1: Acquire conceptual knowledge of basics of accounting CO2: Recommend events that need to be recorded in the accounting records and develop the skill of recording financial transactions and preparation of reports in accordance with GAAP CO3: Describe the role of accounting information and its limitations CO4: Discuss the accounting process and preparation of final accounts of sole trader CO5: Identify and analyze the reasons for the difference between cash book and pass book balances.
332	BTEEESC303	Power Generation Process	<ul style="list-style-type: none"> <li>• To introduce the concepts and phenomenon of different sources of Power Generation</li> <li>• To familiarize the students with the Tariff methods for electrical energy consumption in the prospect of optimum utilization of electrical energy.</li> <li>• To This course is a beginners fundamental of Power systems course.</li> <li>• To emphasis on the economic aspects of Generating and Distributing Electric Power</li> </ul>	CO1: Understand the Layout of Various Generating Power Stations. CO2: Design Electrical Layout of Various Generating Stations CO3: Discuss various power sources for generation of power Merit/Demerits. CO4: Calculate usage of electrical power CO5: Describe the power / Energy demand in the form of graph
333	BTEEPCC304	Electrical Circuit Analysis	<ul style="list-style-type: none"> <li>• To provide a methodical approach to problem solving.</li> <li>• To learn a number of powerful engineering circuit analysis techniques such as nodal analysis, mesh analysis, theorems, source transformation and several methods of simplifying networks.</li> <li>• To understand the concept of graphical solution to electrical network</li> <li>• To understand frequency response in electrical circuits</li> <li>• To analyze different types of two-port network using network parameters, with different types of connections</li> </ul>	CO1: Discuss the concepts of trigonometry, complex algebra, and matrix algebra using modern engineering tools necessary for electrical engineering practices. CO2: Apply network theorems for the analysis of electrical circuits. CO3: Evaluate the transient and steady-state response of electrical circuits. CO4: Analyze circuits in the sinusoidal steady-state (single-phase and three-phase). CO5: Discuss two port circuit behaviors.

## Course Outcomes

S. No.	Course Code	Course Title	Course Objective	Expected Outcome
334	BTEEPCC305	Analog Electronics	<ul style="list-style-type: none"> <li>• To expose the students semiconductor device, performance characteristics and their application.</li> <li>• To expose different signal processing technique and characteristics.</li> <li>• To analyze and design idealized active linear circuits containing OPAMPS</li> </ul>	<p>CO1: Understand the characteristics of transistors</p> <p>CO2: Design and analyse various rectifier and amplifier circuits.</p> <p>CO3: Construct sinusoidal and non-sinusoidal oscillators.</p> <p>CO4: Describe the functioning of OP-AMP and design OP-AMP based circuits.</p> <p>CO5: Illustrate working principle of different electronic circuit and their application in real life.</p>
335	BTEEPCC306	Electrical Machine-I	<ul style="list-style-type: none"> <li>• To prepare the students to have a basic knowledge of transformers, motors&amp; alternator.</li> <li>• To prepare the students to have a basic knowledge of magnetic field</li> <li>• To Design the magnetic circuits.</li> </ul>	<p>CO1: Know about the concepts of magnetic circuits.</p> <p>CO2: Understand the operation of dc machines.</p> <p>CO3: Analyze the operation of different dc machine configurations.</p> <p>CO4: Understand the design of single phase and three phase transformers circuits.</p> <p>CO5: Understand the testing and applications of dc machines.</p>
336	BTEEPCC307	Electromagnetic Field	<ul style="list-style-type: none"> <li>• To introduce the basic mathematical concepts related to electromagnetic vector fields.</li> <li>• To impart knowledge on the concepts of magnetostatics, magnetic flux density, scalar and vector potential and its applications.</li> <li>• To impart knowledge on the concepts of Faraday's law, induced emf and Maxwell's equations.</li> <li>• To impart knowledge on the concepts of Concepts of electromagnetic waves and Transmission lines.</li> </ul>	<p>CO1: Know the basic laws of electromagnetism.</p> <p>CO2: Obtain the electric and magnetic fields for simple configurations under static conditions.</p> <p>CO3: Evaluate time varying electric and magnetic fields.</p> <p>CO4: Understand Maxwell's equation in different forms and different media.</p> <p>CO5: Describe the propagation of EM waves.</p>
337	BTEEPCC308	Analog Electronics Lab	<ul style="list-style-type: none"> <li>• To design various BJT and FET Voltage and Power amplifiers.</li> <li>• To design various BJT Feedback amplifiers, BJT Oscillators, voltage amplifier.</li> </ul>	<p>CO1: Apply the concepts of amplifiers in the design of Public Addressing System.</p> <p>CO2: Develop Sinusoidal wave forms of given specifications.</p> <p>CO3: Solve stable system using feedback concepts.</p> <p>CO4: Define the working multi vibrators using transistor.</p> <p>CO5: Discuss amplifier circuits using BJT's And FET's and observes the amplitude and frequency responses of common amplifier circuits.</p>

## Course Outcomes

S. No.	Course Code	Course Title	Course Objective	Expected Outcome
338	BTEEPCC309	Electrical Machine-I Lab	<ul style="list-style-type: none"> <li>• To provide hands on experience of conducting various tests on dc machines and obtaining their performance indices using standard analytical as well as graphical methods.</li> <li>• To provide hands on experience of conducting various tests on transformers and obtaining their performance indices using standard analytical as well as graphical methods.</li> </ul>	<p>CO1: Know the relevant information to supplement to the Electric Machine- I course.</p> <p>CO2: Set up testing strategies and select proper instruments to evaluate performance characteristics of electrical machines.</p> <p>CO3: Discuss Estimate constraints, uncertainties and risks of the system (social, environmental, business, safety issues etc.). Combine an understanding of the established principles, theories, concepts and terminology relevant to electrical machines with practical laboratory experimentation.</p> <p>CO4: Compute professional quality textual and graphical presentations of laboratory data and computational results, in incorporating accepted data analysis and synthesis methods, mathematical software, and word processing tools.</p> <p>CO5: Students will demonstrate the ability to interact effectively on a social and interpersonal level with fellow students, and will demonstrate the ability to divide up and share task responsibilities to complete assignments.</p>
339	BTEEPCC310	Electrical Circuit Design Lab	<ul style="list-style-type: none"> <li>• To gain hands on experience in designing electronic circuits.</li> <li>• To Construct waveform generation circuits</li> </ul>	<p>CO1: Observe Circuits Design on PCB and Breadboard.</p> <p>CO2: Calculate satisfactory laboratory record data.</p> <p>CO3: Design of electronic circuits using MATLAB.</p> <p>CO4: Analyse the characteristics of Multivibrators.</p> <p>CO5: Describe the characteristics of Converters.</p>
340	BTEEPSIT311	Industrial Training / Seminar	<ul style="list-style-type: none"> <li>• To acquire and apply fundamental principles of engineering.</li> <li>• To identify, formulate and present model problems.</li> <li>• To identify, formulate and model problems and find engineering solution based on a systems approach.</li> </ul>	<p>CO1: Capability to acquire and apply fundamental principles of engineering.</p> <p>CO2: Become master in one's specialized technology</p> <p>CO3: Become updated with all the latest changes in technological world.</p> <p>CO4: Ability to identify, formulate and model problems and find engineering solution based on a systems approach.</p>

## Course Outcomes

S. No.	Course Code	Course Title	Course Objective	Expected Outcome
341	BTEESODECA312	Social Outreach, Discipline & Extra	<ul style="list-style-type: none"> <li>• To allowing students to explore strengths and talents outside of academics.</li> <li>• To helping students develop stronger time-management and organizational skills.</li> <li>• To giving students the opportunity to build friendships and participate in group activities outside of the tight circle of the regular classroom.</li> <li>• To helping to build confidence and self-esteem.</li> </ul>	<p>CO1: Develop their self-confidence, leadership qualities, and their responsibilities towards the community.</p> <p>CO2: Have an impact on academic development, personal development, and civic responsibility</p> <p>CO3: Understand the value of Social Work.</p> <p>CO4: Understand the Significance of Discipline in student's Life</p> <p>CO5: Contribute towards in social up-gradation by social organization like, Art of Living, Yoga etc., Blood donation, Awareness programs, personality development programs.</p>
342	BTEEBSC401	Biology	<ul style="list-style-type: none"> <li>• To provide students with a broad conceptual background in the biological sciences.</li> <li>• To provide students with a various classifications of biology.</li> <li>• To Gain knowledge of various types of enzymes.</li> <li>• To Gain knowledge about genetics.</li> </ul>	<p>CO1: Describe how biological observations of 18th Century that lead to major discoveries.</p> <p>CO2: Convey that classifying per se is not what biology is all about but highlight the underlying criteria, such as morphological, biochemical and ecological</p> <p>CO3: Show the concepts of recessiveness and dominance during the passage of genetic material from parent to offspring.</p> <p>CO4: Classify enzymes and distinguish between different mechanisms of enzyme action.</p> <p>CO5: Identify DNA as a genetic material in the molecular basis of information transfer.</p>

## Course Outcomes

S. No.	Course Code	Course Title	Course Objective	Expected Outcome
343	BTEEHSMC402	Technical Communication	<ul style="list-style-type: none"> <li>• To understand the characteristics of technical writing and the importance of purpose, audience, and genre for written communication in technical fields.</li> <li>• To articulate complex engineering ideas appropriate for targeted audiences.</li> <li>• To plan, drafting, revising, editing, and critiquing technical and professional documents through individual and collaborative writing.</li> <li>• To write effective technical and business documents that are grammatically and stylistically correct. e. Preparing and delivering professional technical presentations through applying principles of effective oral communication and slide design.</li> </ul>	<p>CO1: Examine an effective technical report, displaying the ability to employ appropriate rhetorical strategies and language features to make claims, present arguments, cite and comment on relevant literature, and interpret and comment on research results.</p> <p>CO2: Observe an effective technical abstract, displaying the ability to select important pieces of information and synthesize them into an accurate preview of the report.</p> <p>CO3: Describe an effective oral presentation, displaying the ability to engage the audience by employing a suitable delivery style, appropriate language, and quality visual aids.</p> <p>CO4: A Practice of Create awareness, conviction &amp; commitment to values for improving the quality of life through education, and for advancing social and human well being.</p> <p>CO5: Understand the students as citizens so that the norms and values of human rights and duties education programme are realized.</p>
344	BTEE ESC 403	Electronic Measurement & Instrumentation	<ul style="list-style-type: none"> <li>• To introduce students to monitor, analyze and control any physical system</li> <li>• To understand students how different types of meters work and their construction</li> <li>• To provide knowledge to design and create novel products and solutions for real life problems</li> <li>• To introduce students a knowledge to use modern tools necessary for electrical projects.</li> </ul>	<p>CO1: Understand the working of various instruments and equipments used for the measurement of various electrical engineering parameters like voltage, current, power, phase etc in industry as well as in power generation, transmission and distribution sectors.</p> <p>CO2: Analyze and solve the varieties of problems and issues coming up in the vast field of electrical measurements</p> <p>CO3: Apply innovative ideas to improve the existing technology in the field of measurements in terms of accuracy, cost, and durability and user friendliness</p> <p>CO4: Design a system, component or process to meet desired needs in electrical engineering.</p> <p>CO5: Define measure strain, displacement, Velocity, Angular Velocity, temperature, Pressure, Vacuum, and Flow.</p>

## Course Outcomes

S. No.	Course Code	Course Title	Course Objective	Expected Outcome
345	BTEE PCC 404	Electrical Machine-II	<ol style="list-style-type: none"> <li>1. To understand the concepts of rotating magnetic fields.</li> <li>2. To understand the operation of ac machines.</li> <li>3. To analyze performance characteristics of ac machines.</li> </ol>	<p>CO1: Know the constructional details and principle of operation of alternators.</p> <p>CO2: Discuss the working of synchronous machines as generators and motors.</p> <p>CO3: Examine and applications of synchronous machines.</p> <p>CO4: Describe the Constructional details and principle of operation of three phase and single phase induction motors.</p> <p>CO5: Conclude about the starting and speed control of induction motors</p>
346	BTEE PCC 405	Power Electronics	<ul style="list-style-type: none"> <li>• To understand the basics concept of Power Electronics.</li> <li>• To provide the details of power semiconductor switches (Construction, Characteristics and operation).</li> <li>• To understand the construction &amp; working of various types of converters.</li> <li>• To analyze the converters and design the components of them, under various load types.</li> </ul>	<p>CO1: Define the differences between signal level and power level devices.</p> <p>CO2: Analyze controlled rectifier circuits.</p> <p>CO3: Define the operation of DC-DC choppers.</p> <p>CO4: Discuss working principle of voltage source inverters.</p> <p>CO5: Calculate the control of various converters function.</p>
347	BTEE PCC 406	Signals & Systems	<ul style="list-style-type: none"> <li>• To Acquire knowledge about the interconnection of elements in a system, classification of signals and basic operations on signals.</li> <li>• To Acquire knowledge about the time domain analysis of first order systems and representation of total response in various formats</li> </ul>	<p>CO1: Understand the concepts of continuous time and discrete time systems.</p> <p>CO2: Analyze systems in complex frequency domain.</p> <p>CO3: Discuss sampling theorem and its implications.</p> <p>CO4: Describe the block diagram representation and structures for system realization</p> <p>CO5: Solve the Problem using Fourier series, Fourier transform and Laplace transform.</p>
348	BTEE PCC 407	Digital Electronics	<ul style="list-style-type: none"> <li>• To Develop competence in Combinational Logic Problem formulation and Logic Optimisation</li> <li>• To Develop design capability in the field of combinational logic using gates and state-of-the art MUX, ROM, PLA and PAL units</li> </ul>	<p>CO1: Understand working of logic families and logic gates.</p> <p>CO2: Discuss Combinational and Sequential logic circuits.</p> <p>CO3: Analyze the process of Analog to Digital conversion and Digital to Analog conversion.</p> <p>CO4: Develop PLDs to implement the given logical problem.</p>

## Course Outcomes

S. No.	Course Code	Course Title	Course Objective	Expected Outcome
349	BTEE PCC 408	Electrical Machine-II Lab	<ul style="list-style-type: none"> <li>• To Acquire knowledge about the constructional details and principle of operation of alternators. Acquire knowledge about the</li> <li>• To Acquire knowledge about constructional details and principle of operation of three phase and single phase induction motors.</li> </ul>	<p>CO1: Discuss the working of synchronous machines as generators and motors.</p> <p>CO2: Describe testing and applications of synchronous machines.</p> <p>CO3: Determine the starting and speed control of induction motors.</p> <p>CO4: Know the constructional details and principle operation of alternators.</p>
350	BTEE PCC 409	Power Electronics Lab	<ul style="list-style-type: none"> <li>• To provide the details of power semiconductor switches (Construction, Characteristics and operation).</li> <li>• To understand the differences between signal level and power level devices.</li> </ul>	<p>CO1: Design &amp; Construction of controlled rectifier circuits.</p> <p>CO2: Discuss the operation of DC-DC choppers.</p> <p>CO3: Discuss working details the operation of voltage source inverters.</p> <p>CO4: Analyze the converters and design the components of them, under various load types.</p> <p>CO5: Know the control of various semiconductor devices.</p>
351	BTEE PCC 410	Digital Electronics Lab	<ul style="list-style-type: none"> <li>• To get an insight about the basic introduction of Digital electronics.</li> <li>• To Understand working of logic families and logic gates.</li> </ul>	<p>CO1: Discuss Combinational and Sequential logic circuits.</p> <p>CO2: Understand the process of Analog to Digital conversion and Digital to Analog conversion.</p> <p>CO3: Solve using PLDs to implement the given logical problem.</p> <p>CO4: Know the basic introduction of Digital electronics.</p> <p>CO5: Understand working of logic families and logic gates.</p>
352	BTEE PCC 411	Measurement Lab	<ul style="list-style-type: none"> <li>• To provide various measurement devices, their characteristics, their operation and their limitations.</li> <li>• To Analyze the dynamic response and the calibration of few instruments.</li> </ul>	<p>CO1: Understand different measurement devices and its working principles.</p> <p>CO2: Know the principle of calibration of a measuring instrument and plotting of calibration curves.</p> <p>CO3: Demonstrate on working of ammeter, voltmeter, wattmeter, bridge and etc.</p> <p>CO4: Understand statistical data analysis.</p> <p>CO5: Analyze the dynamic response and the calibration of few instruments.</p>

## Course Outcomes

S. No.	Course Code	Course Title	Course Objective	Expected Outcome
353	BTEESODECA412	Social Outreach, Discipline & Extra Curricular Activates	<ul style="list-style-type: none"> <li>• To allowing students to explore strengths and talents outside of academics.</li> <li>• To helping students develop stronger time-management and organizational skills.</li> <li>• To giving students the opportunity to build friendships and participate in group activities outside of the tight circle of the regular classroom.</li> <li>• To helping to build confidence and self-esteem.</li> </ul>	<p>CO1: Develop their self-confidence, leadership qualities, and their responsibilities towards the community.</p> <p>CO2: Have an impact on academic development, personal development, and civic responsibility</p> <p>CO3: Understand the value of Social Work.</p> <p>CO4: Understand the Significance of Discipline in student's Life</p> <p>CO5: Contribute towards in social up-gradation by social organization like, Art of Living, Yoga etc., Blood donation, Awareness programs, personality development programs.</p>
354	BTEEESC501	Electrical Materials	<ul style="list-style-type: none"> <li>• To provide students with a thorough understanding of the electrical properties and characteristics of various materials, used in the electrical appliances , devices , instruments and in the applications associated with generation, transmission and distribution of electric power.</li> <li>• To provide students with a moderate level understanding of the physics behind the electrical engineering materials</li> </ul>	<p>CO1: Understand the material science essential to work in different industries</p> <p>CO2: Motivate them to do innovative research while going for higher studies and also to work in R &amp; D with scientific enthusiasm.</p> <p>CO3: Evaluate of the electrical properties and characteristics of various materials, used in the electrical appliances, devices, instruments.</p> <p>CO4: Apply the applications associated with generation, transmission and distribution of electric power.</p> <p>CO5: Understand the physics behind the electrical engineering materials.</p>
355	BTEEPCC502	Power System – I	<ul style="list-style-type: none"> <li>• To Awareness of general structure of power system.</li> <li>• To make students capable of analysis of mechanical and electrical design aspects of transmission system.</li> <li>• To Impart the knowledge of protective relays and circuit breakers.</li> </ul>	<p>CO1: Discuss the concepts of power systems.</p> <p>CO2: Describe the various power system components.</p> <p>CO3: Evaluate fault currents for different types of faults.</p> <p>CO4: Understand the design of basic protection schemes.</p> <p>CO5: Classify the concepts of HVDC power transmission and renewable energy generation.</p>
356	BTEEPCC503	Control System	<ul style="list-style-type: none"> <li>• To obtain models of dynamic systems in transfer function and state space forms</li> <li>• To provide the common control schemes</li> <li>• To Analyze the system response and stability in both time-domain and frequency domain</li> </ul>	<p>CO1: Discuss the modeling of linear-time-invariant systems using transfer function and state-space representations.</p> <p>CO2: Understand the concept of stability and its assessment for linear-time invariant systems.</p> <p>CO3: Know the simple feedback controllers.</p> <p>CO4: Analyze the response of discretized systems</p> <p>CO5: Design compensators using time-domain and frequency domain specifications.</p>

## Course Outcomes

S. No.	Course Code	Course Title	Course Objective	Expected Outcome
357	BTEEPCC504	Microprocessor	<ul style="list-style-type: none"> <li>• To provide the basics of Digital Systems.</li> <li>• To understand the working of a microprocessor.</li> <li>• To compile and debug a Program.</li> <li>• To generate an executable file and use it.</li> </ul>	CO1: Understand the assembly language programming. CO2: Know interfacing design of peripherals like I/O, A/D, D/A, timer etc. CO3: Adapt Develop systems using different microcontrollers. CO4: Understand Digital configuring and using different peripherals in a digital system. CO5: Compute and debug a Program.
358	BTEEPCC505	Electrical Machine Design	<ul style="list-style-type: none"> <li>• To Acquire knowledge to carry out a detailed design of a dc machine and provide the information required for the fabrication of the same along with an estimate of various performance indices.</li> <li>• To Acquire knowledge to carry out a detailed design of a transformer and provide the information required for the fabrication of the same along with an estimate of various performance indices.</li> </ul>	CO1: Understand the construction and performance characteristics of electrical machines. CO2: Know the various factors which influence the Electric machine design CO3: Discuss the principles of electrical machine design and carry out a basic design of an ac machine. CO4: Use software tools to do design calculations. CO5: Describe an alternator and provide the information required for the fabrication of the same along with an estimate of various performance indices.
359	BTEEPEC506A	Restructured Power System	<ul style="list-style-type: none"> <li>• To provide in-depth understanding of operation of deregulated electricity market systems..</li> <li>• To train the students to analyze various types of electricity market operational and control issues under congestion management.</li> <li>• To examine topical issues in electricity markets and how these are handled world-wide in various markets.</li> <li>• To learn different pricing mechanism and power trading in restructured power system.</li> </ul>	CO1: Discuss the need for restructuring of Power Systems, discuss different market models, different stakeholders and market power. CO2: Understand and generalize the functioning and planning activities of ISO. CO3: Describe the transmission open access pricing issues and congestion management. CO4: Define transfer capability and estimate the transfer capability of small power systems. CO5: Analyze ancillary services and understand reactive power as ancillary service and management through synchronous generator.

## Course Outcomes

S. No.	Course Code	Course Title	Course Objective	Expected Outcome
360	BTEEPEC506B	Electromagnetic Wave	<ul style="list-style-type: none"> <li>• To impart knowledge on the concepts of Faraday's law, induced emf, electromagnetic waves ,Transmission lines and Maxwell's equations.</li> <li>• To familiarize the students with the different concepts of electrostatic, magnetostatic and time varying electromagnetic systems.</li> <li>• To understand and analyze radiation by antennas.</li> </ul>	<p>CO1: Analyse transmission lines and estimate voltage and current at any point on transmission line for different load conditions.</p> <p>CO2: Solve real life plane wave problems for various boundary conditions.</p> <p>CO3: Analyse the field equations for the wave propagation in special cases such as lossy and low loss dielectric media.</p> <p>CO4: Show TE and TM mode patterns of field distributions in a rectangular wave-guide.</p> <p>CO5: Analyse radiation by antennas.</p>
361	BTEEPEC506C	Digital Control System	<ul style="list-style-type: none"> <li>• To understand the basic principles and modeling of digital control system in transfer function and state-space domain.</li> <li>• To understand application of Laplace and Z-transforms and its correlation for digital control system.</li> </ul>	<p>CO1: Evaluate discrete representation of LTI systems.</p> <p>CO2: Analyse stability of open loop and closed loop discrete-time systems.</p> <p>CO3: Design and analyse digital controllers.</p> <p>CO4: Know state feedback and output feedback controllers.</p> <p>CO5: Understand the basic principles and modeling of digital control system in transfer function and state-space domain.</p>
362	BTEEPCC507	Power System-I Lab	<ul style="list-style-type: none"> <li>• To analyze the performance of power system networks by conducting various experiments.</li> <li>• To study different power system equipment by conducting suitable experiments.</li> </ul>	<p>CO1: Design considerations, basic schemes and single line diagram.</p> <p>CO2: Compute the experimental results and correlating them with the practical power system.</p> <p>CO3: Describe layout of various power plants.</p> <p>CO4: Analyze the performance of transmission lines</p> <p>CO5: Know various tests on transformer.</p>

## Course Outcomes

S. No.	Course Code	Course Title	Course Objective	Expected Outcome
363	BTEEPCC508	Control System Lab	<ul style="list-style-type: none"> <li>• To employ time domain analysis to predict and diagnose transient performance parameters of the system for standard input functions and identify the needs of different types of controllers and compensator to ascertain the required dynamic response from the system.</li> <li>• To Formulate different types of analysis in frequency domain to explain the nature of stability of the system.</li> </ul>	<p>CO1: Categorize different types of system and identify a set of algebraic equations to represent and model a complicated system into a more simplified form.</p> <p>CO2: Manipulate any system in Laplace domain to illustrate different specification of the system using transfer function concept.</p> <p>CO3: Interpret different physical and mechanical systems in terms of electrical system to construct equivalent electrical models for analysis.</p> <p>CO4: Memorize time domain analysis to predict and diagnose transient performance parameters of the system for standard input functions.</p> <p>CO5: Discuss different types of analysis in frequency domain to explain the nature of stability of the system.</p>
364	BTEEPCC509	Microprocessor Lab	<ul style="list-style-type: none"> <li>• To expose students to the operation of typical microprocessor (8085) trainer kit.</li> <li>• To prepare the students to be able to solve different problems by developing different programs.</li> </ul>	<p>CO1: Know relevant information to supplement to the Microprocessor and Microcontroller course.</p> <p>CO2: Investigate set up programming strategies and select proper mnemonics and run their program on the training boards.</p> <p>CO3: Evaluate possible causes of discrepancy in practical experimental observations in comparison.</p> <p>CO4: Demonstrate experimental procedures on Microprocessor and Microcontroller analyze their operation under different cases.</p> <p>CO5: Classify professional quality textual and computational results, incorporating accepted data analysis and synthesis methods, simulation software, and word processing tools.</p>
365	BTEEPCC510	System Programming Lab	<ul style="list-style-type: none"> <li>• To familiarize the student in introducing and exploring MATLAB software.</li> <li>• To enable the student on how to approach for solving Engineering problems using simulation tools</li> </ul>	<p>CO1: Discuss to express programming &amp; simulation for engineering problems</p> <p>CO2: Evaluate to find importance of this software for Lab Experimentation.</p> <p>CO3: Manipulate the basic mathematical, electrical, electronic problems in Matlab.</p> <p>CO4: Discuss the simulate basic electrical circuit in Simulink.</p> <p>CO5: Describe programming files with GUI Simulink.</p>

## Course Outcomes

S. No.	Course Code	Course Title	Course Objective	Expected Outcome
366	BTEEPSIT511	Industrial Training	<ul style="list-style-type: none"> <li>• To acquire and apply fundamental principles of engineering.</li> <li>• To identify, formulate and present model problems.</li> <li>• To identify, formulate and model problems and find engineering solution based on a systems approach.</li> </ul>	CO1: Capability to acquire and apply fundamental principles of engineering. CO2: Become master in one's specialized technology CO3: Become updated with all the latest changes in technological world. CO4: Ability to identify, formulate and model problems and find engineering solution based on a systems approach.
367	BTEESODECA512	Social Outreach, Discipline & Extra Curricular Activities	<ul style="list-style-type: none"> <li>• To allowing students to explore strengths and talents outside of academics.</li> <li>• To helping students develop stronger time-management and organizational skills.</li> <li>• To giving students the opportunity to build friendships and participate in group activities outside of the tight circle of the regular classroom.</li> <li>• To helping to build confidence and self-esteem.</li> </ul>	CO1: Develop their self-confidence, leadership qualities, and their responsibilities towards the community. CO2: Have an impact on academic development, personal development, and civic responsibility CO3: Understand the value of Social Work. CO4: Understand the Significance of Discipline in student's Life CO5: Contribute towards in social up-gradation by social organization like, Art of Living, Yoga etc., Blood donation, Awareness programs, personality development programs.
368	BTEEESC601	Computer Architecture	<ul style="list-style-type: none"> <li>• To understand the basic principles and hardware structures of computer systems including personal computers and workstations</li> <li>• To provide how to design computers.</li> <li>• To cover data representation, CPU organization, instruction classification, language processing of assemblers and compilers, pipelining for performance enhancement, memory hierarchy, cache memory, and IO peripheral devices. In addition, high-performance computer systems are to be introduced.</li> </ul>	CO1: Understand the concepts of microprocessors, their principles and practices. CO2: Describe the efficient programs in assembly language of the 8086 family of microprocessors. CO3: Organize a modern computer system and be able to relate it to real examples. CO4: Discuss the programs in assembly language for 80286, 80386 and MIPS processors in real and protected modes. CO5: Discuss embedded applications using ATOM processor.
369	BTEEPCC602	Power System-II	<ul style="list-style-type: none"> <li>• To provide knowledge of load density calculation in an area and forecasting of load in advance using different methods.</li> <li>• To provide the information of power system economics and factors affecting the economic load dispatch.</li> </ul>	CO1: Use numerical methods to analyse a power system in steady state. CO2: Understand stability constraints & improvement in a synchronous grid. CO3: Describe various methods to control the voltage, frequency and power flow. CO4: Understand the monitoring and examine of a power system. CO5: Evaluate of power system economics.

## Course Outcomes

S. No.	Course Code	Course Title	Course Objective	Expected Outcome
370	BTEEPCC603	Power System Protection	<ul style="list-style-type: none"> <li>• To discuss protection of power systems against faults and transient over voltages</li> <li>• To introduce students to power system protection and switchgear.</li> <li>• To teach students theory and applications of the main components used in power system protection for electric machines, transformers, bus bars, overhead feeders.</li> <li>• To teach students the theory, construction, applications of main types Circuit breakers, Relays for protection of generators, transformers and protection of feeders from over- voltages and other hazards.</li> </ul>	<p>CO1: Discuss the different components of a protection system.</p> <p>CO2: Evaluate fault current due to different types of fault in a network.</p> <p>CO3: Describe the protection schemes for different power system components.</p> <p>CO4: Discuss the Computer-aided protection.</p> <p>CO5: Categorize various system protection schemes, and the use of wide-area measurements.</p>
371	BTEEPCC604	Electrical Energy Conversion and Auditing	<ul style="list-style-type: none"> <li>• To design and development of various energy management technologies.</li> <li>• To identify, formulate and solve fields problem in a multi-disciplinary frame individually or as a member of a group.</li> </ul>	<p>CO1: Understand the current energy scenario and importance of energy conservation.</p> <p>CO2: Analyze the concepts of energy management.</p> <p>CO3: Describe the methods of improving energy efficiency in different electrical systems.</p> <p>CO4: Calculate the concepts of different energy efficient devices.</p>
372	BTEEPCC605	Electric Drives	<ul style="list-style-type: none"> <li>• To provide basics of electric drive analysis.</li> <li>• To be able to analyze and design systems with electric drive.</li> <li>• To provide fundamental knowledge in dynamics and control of Electric Drives.</li> <li>• To justify the selection of Drives for various applications.</li> </ul>	<p>CO1: Summarize the basics of electric drive analysis</p> <p>CO2: Discuss the characteristics of dc motors and induction motors.</p> <p>CO3: Calculate the speed-control of dc motors and induction motors.</p> <p>CO4: Examine Scalar control or constant V/f control &amp; PWM Signal of induction motor.</p>
373	BTEEPEC606A	Power System Planning	<ul style="list-style-type: none"> <li>• To analyze and evaluate an electric power system for generation planning and load forecasting, and</li> <li>• To execute production costing analysis and long term generation expansion plans in a deregulated environment</li> </ul>	<p>CO1: Understand and distinguish characteristics of distribution systems from transmission systems</p> <p>CO2: Discuss the distribution system design based on forecasted data</p> <p>CO3: Identify and draw the appropriate sub-station location</p> <p>CO4: Describe distribution system for a given geographical service area from alternate design alternatives.</p>

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374	BTEEPEC606B	Digital Signal Processing	<ul style="list-style-type: none"> <li>• To make students familiar with the most important methods in DSP, including digital filter design, transform-domain processing and importance of Signal Processors.</li> <li>• To make students aware about the meaning and implications of the properties of systems and signals.</li> </ul>	CO1: Define signals mathematically in continuous and discrete-time, and in the frequency domain. CO2: Analyse discrete-time systems using z-transform. CO3: Understand the Discrete-Fourier Transform (DFT) and the FFT algorithms. CO4: Define the digital filters for various applications. CO5: Apply digital signal processing for the analysis of real-life signals.
375	BTEEPEC606C	Electrical and Hybrid Vehicles	<ul style="list-style-type: none"> <li>• To focus on mechatronic system and component design of HEV based on the requirements to power flow management, power conversion and thus to vehicle dynamics and energy/fuel efficiency</li> </ul>	CO1: Describe hybrid vehicles and their performance. CO2: Discuss the different possible ways of energy storage. CO3: Examine the different strategies related to energy storage systems. CO4: Draw the electric vehicle drive systems CO5: Describe of energy management strategies.
376	BTEEPCC607	Power System-II Lab	<ul style="list-style-type: none"> <li>• To analyze the performance of power system networks by conducting various experiments.</li> <li>• To study different power system protective equipment by conducting suitable experiments.</li> <li>• To develop computer programs for analysis of power systems</li> </ul>	CO1: Understanding the students to do load flow and short circuit calculations CO2: Examine and computational analysis on power systems CO3: Solve power flow problem using numerical method CO4: Discuss the numerical methods for solution of stability analysis CO5: Describe the deregulated power system.
377	BTEEPCC608	Electric Drives Lab	<ul style="list-style-type: none"> <li>• To impart knowledge on Performance of the fundamental control practices associated with AC and DC machines (starting, reversing, braking, plugging, etc.) using power electronics</li> <li>• To impart industry oriented learning</li> <li>• To evaluate the use of computer-based analysis tools to review the major classes of machines and their physical basis for operation</li> </ul>	CO1: Know basics of electric drive System CO2: Understand the Performance of the fundamental control practices associated with AC and DC machines like starting, reversing, braking, plugging, etc. CO3: Calculation the operation of inverters and Cyclo converters CO4: Evaluate the use of computer-based analysis tools to review the major classes of machines and their physical basis for operation.

## Course Outcomes

S. No.	Course Code	Course Title	Course Objective	Expected Outcome
378	BTEEPCC609	Power System Protection Lab	<ul style="list-style-type: none"> <li>• To provide experimental and project oriented verification of principles of industrial system design and power system protection.</li> <li>• To get laboratory experience that will be invaluable to a student who intends to make power engineering his professional career.</li> </ul>	CO1: Calculate the fault current due to different types of fault in a network. CO2: Use of microcontrollers for protection System CO3: Understand the basic principles of digital protection. CO4: Describe the fundamentals of electromechanical relays and digital protective relaying CO5: Classify the construction & working principle of directional over current protection.
379	BTEEPCC610	Modelling and Simulation Lab	<ul style="list-style-type: none"> <li>• To introduce various system modeling and simulation techniques, and highlight their applications in different areas.</li> <li>• To do modeling, design, simulation, planning, verification and validation. After learning the simulation techniques, the students are expected to be able to solve real world problems which cannot be solved strictly by mathematical approaches</li> </ul>	CO1: Use of these tools for any engineering and real time applications CO2: Describe the Implement the simulation model using MATLAB. CO3: Describe the working principles of FACTS devices and their operating characteristics. CO4: Understand the modelling and simulation of various machines.
380	BTEESODECA611	Social Outreach, Discipline & Extra Curricular Activates	<ul style="list-style-type: none"> <li>• To allowing students to explore strengths and talents outside of academics.</li> <li>• To helping students develop stronger time-management and organizational skills.</li> <li>• To giving students the opportunity to build friendships and participate in group activities outside of the tight circle of the regular classroom.</li> <li>• To helping to build confidence and self-esteem.</li> </ul>	CO1: Develop their self-confidence, leadership qualities, and their responsibilities towards the community. CO2: Have an impact on academic development, personal development, and civic responsibility CO3: Understand the value of Social Work. CO4: Understand the Significance of Discipline in student's Life CO5: Contribute towards in social up-gradation by social organization like, Art of Living, Yoga etc., Blood donation, Awareness programs, personality development programs.
381	BTEEPEC701A	Wind & Solar Energy Systems	<ul style="list-style-type: none"> <li>• To understand the various forms of non conventional energy resources.</li> <li>• To provide the present energy scenario and the need for energy conservation</li> <li>• To explain the concept of various forms of renewable energy</li> <li>• To outline division aspects and utilization of renewable energy sources for both domestics and industrial application</li> </ul>	CO1: Know the History of wind energy resources and different Function. CO2: Discuss Winds energy as alternate form of energy and to know how it can be tapped CO3: Use of solar energy and the various components used in the energy production with respect to applications CO4: Classify about the Hybrid and isolated operations of solar PV and wind systems CO5: Understand the Power system interconnection system.

## Course Outcomes

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382	BTEEPEC701B	Power Quality and FACTS	<ul style="list-style-type: none"> <li>• To impart knowledge about the power quality and its assessments.</li> <li>• To provide the concept of power flow control through various power electronic controllers including state of art FACTS controllers, operational aspects, capabilities and their integration in power flow analysis.</li> <li>• To provide the effectiveness of Filters in distribution system for harmonic mitigation etc.</li> <li>• To know the application of FACTS controllers as case studies in the power System</li> </ul>	<p>CO1: Know the basic concept of active and reactive power in electrical power system</p> <p>CO2: Apply Modeling concepts of commonly used FACTS controllers will be understood.</p> <p>CO3: Understand how FACTS controllers, enhance the power system stability.</p> <p>CO4: Solved FACTS devices improve the power system operation</p> <p>CO5: Identify Application of harmonics filters for harmonic mitigation shall be understood.</p>
383	BTEEPEC701C	Control System Design	<ul style="list-style-type: none"> <li>• To teach the fundamental concepts of Control systems and mathematical modelling of the system.</li> <li>• To teach the concept of time response and frequency response of the system.</li> <li>• To teach the basics of stability analysis of the system.</li> <li>• To understand and differentiate the basics of linear time-invariant control system.</li> </ul>	<p>CO1: Understand alternate representations of dynamic systems (time domain, frequency domain, state space)</p> <p>CO2: Define various design specifications in the system .</p> <p>CO3: Calculate the controllers to satisfy the desired design specifications using simple controller structures (P, PI, PID, compensators).</p> <p>CO4: Design controllers using the state-space approach.</p> <p>CO5: Discuss effect of various non-linearities on system performance.</p>
384	BTEEOEC702A	Principle of Electronic Communication	<ul style="list-style-type: none"> <li>• To Impart knowledge on analog and digital modulation techniques as well as make the students to understand about various wireless and cellular, mobile, satellite and telephone communication systems</li> </ul>	<p>CO1: Understand the work on various types of modulations</p> <p>CO2: Use of these communication modulations in implementation</p> <p>CO3: Classify various wireless and cellular, mobile and telephone communication systems</p> <p>CO4: Analyze different parameters of analog communication techniques.</p>

## Course Outcomes

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385	BTEEOEC702B	Water Pollution Control Engineering	<ul style="list-style-type: none"> <li>• To provide students with a scientific and technical background in water quality monitoring, pollution control technologies and environmental management.</li> <li>• To focus on unit operations for municipal and industrial wastewater treatment. Students will also be introduced to the European legislative framework on water quality.</li> </ul>	CO1: Define control common water pollutants in municipal and industrial wastewater. CO2: Describe unit operations used for wastewater treatment CO3: Show how to look at the major water pollutants, their sources, physical, chemical and biological transformations and impacts. CO4: Calculate the various unit operations and unit processes used in water treatment CO5. Interpret the results of laboratory analysis for water characterization.
386	BTEEOEC702C	Micro and Smart System Technology	<ul style="list-style-type: none"> <li>• To gain knowledge of Smart Materials, Sensors &amp; Actuators, Microsystems.</li> <li>• To Understand the Operation of Smart Devices &amp; Systems, Electronic Circuits &amp; Control for MEMS, Methodology of Micro-manufacturing.</li> </ul>	CO1: Define Smart Materials, Sensors & Actuators, Microsystems. CO2: Understand the Working Methodology of Smart Devices & Systems, Electronic Circuits & Control for MEMS, Methodology of Micro-manufacturing CO3: Discuss the Working Methodology of Elastic deformation and stress analysis of beams and plates CO4: Apply knowledge of Integration of microelectronics and micro devices.
387	BTEEPCC703	Embedded System Lab	<ul style="list-style-type: none"> <li>• To make students familiar with the basic concepts and terminology of the target area, the embedded systems design flow.</li> <li>• To give students an understanding of the embedded system architecture.</li> <li>• To acquaint students with methods of executive device control and to give them opportunity to apply and test those methods in practice;</li> </ul>	CO1: Understand basic concepts in the embedded computing systems area CO2: Know the applications of embedded systems CO3: Distinguish the optimal composition and characteristics of an embedded system CO4: Compute the program an embedded system at the basic level CO5: Discuss the development of embedded software.
388	BTEEPCC704	Advanced Control System Lab	<ul style="list-style-type: none"> <li>• To have a strong knowledge on MATLAB software.</li> <li>• To get the basic knowledge on practical control system</li> <li>• To get the knowledge on applications of machines &amp; electronic devices with control systems.</li> </ul>	CO1: Discuss various engineering projects CO2: Knowing About the MATLAB software CO3: Analyze the Lead, Lag, and Lead-Lag systems in control systems CO4: Design PID controllers for given control system model.

## Course Outcomes

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389	BTEEPSIT705	Industrial Training	<ul style="list-style-type: none"> <li>• To acquire and apply fundamental principles of engineering.</li> <li>• To identify, formulate and present model problems.</li> <li>• To identify, formulate and model problems and find engineering solution based on a systems approach.</li> </ul>	CO1: Capability to acquire and apply fundamental principles of engineering. CO2: Become master in one's specialized technology CO3: Become updated with all the latest changes in technological world. CO4: Ability to identify, formulate and model problems and find engineering solution based on a systems approach.
390	BTEEPSIT706	Seminar	<ul style="list-style-type: none"> <li>• To Awareness of how to use values in improving your own professionalism.</li> <li>• To Learning about personal and communication styles for team building.</li> <li>• To identify, formulate and present model problems.</li> <li>• To Learning management of values.</li> </ul>	CO1: Personalize and create a communication style for individual & team building. CO2: Use values in improving one's own professionalism CO3: Develop the higher cognitive abilities that are analysis, synthesis and evaluation. CO4: Ability to identify, formulate and present model problems.
391	BTEESODECA707	Social Outreach, Discipline & Extra Curricular Activates	<ul style="list-style-type: none"> <li>• To allowing students to explore strengths and talents outside of academics.</li> <li>• To helping students develop stronger time-management and organizational skills.</li> <li>• To giving students the opportunity to build friendships and participate in group activities outside of the tight circle of the regular classroom.</li> <li>• To helping to build confidence and self-esteem.</li> </ul>	CO1: Develop their self-confidence, leadership qualities, and their responsibilities towards the community. CO2: Have an impact on academic development, personal development, and civic responsibility CO3: Understand the value of Social Work. CO4: Understand the Significance of Discipline in student's Life CO5: Contribute towards in social up-gradation by social organization like, Art of Living, Yoga etc., Blood donation, Awareness programs, personality development programs.
392	BTEEPEC801A	HVDC Transmission System	<ul style="list-style-type: none"> <li>• To introduce students with the concept of HVDC Transmission system.</li> <li>• To familiarize the students with the HVDC converters and their control system.</li> <li>• To expose the students to the harmonics and faults occur in the system and their prevention.</li> </ul>	CO1: Know the advantages of dc transmission over ac transmission CO2: Understand the operation of Line Commutated Converters and Voltage Source Converters. CO3: Analyze the control strategies used in HVDC transmission system. CO4: Apply various methods to the improvement of power system stability an HVDC system. CO5: Describe the Multi-Terminal and Multi-Infeed Systems.

## Course Outcomes

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393	BTEEPEC801B	Line Commutated & Active Rectifiers	<ul style="list-style-type: none"> <li>• To provide the students a deep insight in to the working of different switching devices with respect to their characteristics</li> <li>• To analyze different converters and control with their applications.</li> <li>• To study advanced converters and switching techniques implemented in recent technology</li> </ul>	CO1: Discuss the design and control of rectifiers, converters CO2: Classify the power electronic converters in power control applications CO3: Understand the operation of line-commutated rectifiers – 6 pulse and multi-pulse configurations. CO4: Design the AC voltage controller and Converter. CO5: Analyse controlled rectifier circuits.
394	BTEEPEC801C	Advanced Electric Drives	<ul style="list-style-type: none"> <li>• To know Electrical drives that play an important part as electromechanical energy converters in transportation, materials handling and most production processes. The course tries</li> <li>• To give unified treatment of complete electrical drive systems, including the mechanical parts, electrical machines, and power converters and control.</li> </ul>	CO1: Understand the operation of power electronic converters and their control strategies. CO2: Analyze the Implement sine-triangle and Space Vector PWM techniques on analog and digital platforms CO3: Know simulate the behavior of high performance induction Motor drives using the principles of Vector Control and DTC CO4: Apply the concept of vector control to PMSM drives CO5: Describe the vector control strategies for ac motor drives.
395	BTEEOEC802A	Electrical & Electronic Ceramics	<ul style="list-style-type: none"> <li>• To understand the fundamentals (structure, properties and processing) of ceramic materials to appreciate its advantages and limitations</li> <li>• To apply those fundamentals for selecting and developing ceramic materials for different engineering applications.</li> </ul>	CO1: Know the structure and properties of different ceramic materials CO2: Understand the testing methods for evaluating the mechanical properties of ceramic materials CO3: Distinguish between the electrical and magnetic properties in ceramic systems CO4: Discuss appreciate the properties of ceramic materials for different engineering applications.
396	BTEEOEC802B	Robotics and Control	<ul style="list-style-type: none"> <li>• To Provide the common control schemes</li> <li>• To develop the ability to analyze and design the motion for articulated systems</li> <li>• To develop an ability to use software tools for analysis and design of robotic systems.</li> </ul>	CO1: Understand the modeling of linear-time-invariant systems using transfer function CO2: Define the concept of stability and its assessment for linear-time invariant systems. CO3: Classify the features of different types of compensators and to design compensators using time-domain and frequency domain specifications. CO4: Understand to do construct the path planning for a robotic system. CO5: Calculate the forward kinematics and inverse kinematics of serial and parallel robots.

## Course Outcomes

S. No.	Course Code	Course Title	Course Objective	Expected Outcome
397	BTEEOEC802C	Composite Materials	<ul style="list-style-type: none"> <li>• To understand the mechanical behaviour of composite materials</li> <li>• To get an overview of the methods of manufacturing composite materials</li> </ul>	CO1: Identify, describe and evaluate the properties of fibre reinforcements, polymer matrix materials and commercial composites CO2: Understanding the different manufacturing methods available for composite material CO3: Illuminate the knowledge and analysis skills in applying basic laws in mechanics to the composite materials. CO4: Analyze problems on micromechanical behavior of lamina CO5: Evaluate Thermal and moisture expansion of a lamina.
398	BTEEPCC803	Energy System Lab	<ul style="list-style-type: none"> <li>• To introduce the concepts and phenomenon of different sources of Power Generation.</li> <li>• To give an idea about the fundamental concepts of electrical power distribution, both AC &amp; DC</li> </ul>	CO1: Discuss various power sources for generation of power Merit/Demerits. CO2: Describe the solar panels at various levels of insolation CO3: Calculate usage of electrical power CO4: Define the functions of Substation.
399	BTEEPSIT804	Project	<ul style="list-style-type: none"> <li>• To introduce the concept and methods required for the construction of large software intensive system.</li> <li>• To develop a broad understanding of the discipline of software engineering and management of software system.</li> <li>• To provide an understanding of both theoretical and methodological issues involve in modern software engineering project management and focus strongly on practical techniques.</li> </ul>	CO1: Capability to acquire and apply fundamental principles of engineering. CO2: Be a multi-skilled engineer with good technical knowledge, management, leadership and entrepreneurship skills. CO3: Identify, formulate and model problems and find engineering solution based on a systems approach. CO4: Capability and enthusiasm for self-improvement through continuous professional development and life-long learning.
400	BTEESODECA805	Social Outreach, Discipline & Extra Curricular Activates	<ul style="list-style-type: none"> <li>• To allowing students to explore strengths and talents outside of academics.</li> <li>• To helping students develop stronger time-management and organizational skills.</li> <li>• To giving students the opportunity to build friendships and participate in group activities outside of the tight circle of the regular classroom.</li> <li>• To helping to build confidence and self-esteem.</li> </ul>	CO1: Develop their self-confidence, leadership qualities, and their responsibilities towards the community. CO2: Have an impact on academic development, personal development, and civic responsibility CO3: Understand the value of Social Work. CO4: Understand the Significance of Discipline in student's Life CO5: Contribute towards in social up-gradation by social organization like, Art of Living, Yoga etc., Blood donation, Awareness programs, personality development programs.

## Course Outcomes

S. No.	Course Code	Course Title	Course Objective	Expected Outcome
401	1JAR1	English Communication	<ol style="list-style-type: none"> <li>1. To identify common communication problems that may be holding learners back</li> <li>2. To identify what their non-verbal messages are communicating to others</li> <li>3. To understand role of communication in teaching-learning process</li> <li>4. To learn to communicate through the digital media</li> <li>5. To understand the importance of empathetic listening</li> <li>6. To explore communication beyond language.</li> </ol>	<p>CO1 Identify problems that may be holding learners back.</p> <p>CO2 Identify what their non-verbal messages are communicating to others.</p> <p>CO3 Understand the role of communication in teaching – learning process.</p> <p>CO4 Understand the importance of empathetic listening.</p> <p>CO5 Explore communication beyond language.</p>
402	1JAR2	Mathematics	<ol style="list-style-type: none"> <li>1. The objective of this subject is to expose student to understand the basic concepts of differential and integral calculus, ordinary differential equations, matrix theory, three-dimensional geometry and basic statistics.</li> <li>2. Know and demonstrate understanding of the concepts from the five branches of mathematics (number, algebra, geometry and trigonometry, statistics and probability, and discrete mathematics).</li> <li>3. Use appropriate mathematical concepts and skills to solve problems in both familiar and unfamiliar situations including those in real-life contexts.</li> <li>4. Select and apply general rules correctly to solve problems including those in real-life contexts.</li> </ol>	<p>CO1 Apply mathematical calculation in all subjects like structure.</p> <p>CO2 Write and understand basic mathematical proofs.</p> <p>CO3 Use mathematical ideas to model real-world problems precisely</p> <p>CO4 Utilize technology to address mathematical ideas.</p> <p>CO5 Develop analytical thinking skills</p>

## Course Outcomes

S. No.	Course Code	Course Title	Course Objective	Expected Outcome
403	1JAR3	Construction Materials-I	<ol style="list-style-type: none"> <li>1. To get aware about the basic building materials and their properties.</li> <li>2. To understand the application and usage of basic building material.</li> <li>3. To understand the manufacturing process along with the lac tests and quality test of the building material.</li> </ol>	<p>CO1 Learn basic building material and their applications.</p> <p>CO2 Learn the physical and chemical properties and will be able to examine various laboratory tests.</p> <p>CO3 Learn the source and their manufacturing process of the building materials.</p> <p>CO4 Learn the advantages and disadvantages of the materials.</p> <p>CO5 Develop the skills of the selection of the materials and usage</p>
404	1JAR4	Architectural Structures-I	<ol style="list-style-type: none"> <li>1. The objective of this course is to introduce students' various methods of discrimination of structural internal forces of deformations.</li> <li>2. To apply these methods for analysing the indeterminate structures to evaluate the response of structures.</li> <li>3. To enable the student, get a feeling of how real-life structures behave.</li> </ol>	<p>CO1 Learn various type of forces, stress, and their concepts</p> <p>CO2 Understand analysis of indeterminate structures and adopt an appropriate structural analysis technique.</p> <p>CO3 Determine response of structures by classical, iterative and matrix methods.</p> <p>CO4 Understand different types of load and its calculation</p> <p>CO5 Learn the application of beams and columns.</p>
405	1JAR5	Architectural Drawing-I	<ol style="list-style-type: none"> <li>1. To develop thought or ideas into drawing skills.</li> <li>2. To develop the knowledge of graphic codes symbols and scales.</li> <li>3. To develop the 2D and 3D representation of any objects.</li> <li>4. To develop the knowledge about the settings of various solid objects.</li> <li>5. To learn about the development of surface.</li> </ol>	<p>CO1 Develop the thought or ideas into drawing skills.</p> <p>CO2 Develop the knowledge of graphic codes symbols and scales.</p> <p>CO3 Develop the 2D and 3D representations of objects and application of the same for building plans.</p> <p>CO4 Gain the knowledge about the settings of various solid objects.</p> <p>CO5 Learn and practical application of development of surface in field.</p>

## Course Outcomes

S. No.	Course Code	Course Title	Course Objective	Expected Outcome
406	1JAR6	Arts & Graphics-I	<ol style="list-style-type: none"> <li>1. Development of Graphic Skills, Ability and Comprehension. Establishing Significance of Art.</li> <li>2. To develop the graphic skills and the importance of art.</li> <li>3. To develop the various rendering techniques by using human figures and vegetation.</li> </ol>	<p>CO1 Learn various rendering technique and their role in graphic</p> <p>CO2 Gain the knowledge of colour, their tint and shade and their applications</p> <p>CO3 Learn various types of colours and techniques to enhance the presentation.</p> <p>CO4 Learn various rendering technique and their role in graphic can be learned.</p> <p>CO5 Construct conceptual and presentation drawings as a design presentation tool for various purposes</p>
407	1JAR7	Building Construction-I	<ol style="list-style-type: none"> <li>1. The Construction Studio Work Should Demonstrate the Inter Dependence of The Building Materials and Elements and Their Understanding to Form Complete Building Envelope.</li> <li>2. To develop the knowledge about the various building elements like bricks, stone, wall, foundation, arches and lintel or their usages and types.</li> <li>3. To awareness about the basics building material, its use and their construction details.</li> </ol>	<p>CO1 Understand various building elements and their use.</p> <p>CO2 Understand construction details of the bricks, stone as per their use in building.</p> <p>CO3 Understand component of openings like arches and lintels, their types and their construction details can be learned</p> <p>CO4 Recall the various drawing techniques, building construction techniques and structural systems.</p> <p>CO5 Interpret and translate the drawings based on the structural and other practical considerations</p>
408	1JAR8	Introduction to Computers-I	<ol style="list-style-type: none"> <li>1. Develop Awareness of Computer and its Environment.</li> <li>2. Historical background of computer. Computer terminology and its operating principles,</li> <li>3. Introduction to hardware and software. Use and types of printers, scanner, plotter, etc. Basic</li> <li>4. Give students an in-depth understanding of why computers are essential components in business, education and society.</li> </ol>	<p>CO1 Gain the Knowledge of operating systems: Windows, Unix, Linux etc. Brief description of various hardware and software used in architecture.</p> <p>CO2 Describe the usage of computers and why computers are essential components in business and society.</p> <p>CO3 Solve common business problems using appropriate Information Technology applications and systems.</p> <p>CO4 Identify categories of programs, system software and applications. Organize and work with files and folders.</p> <p>CO5 Use of various software as professional skills</p>

## Course Outcomes

S. No.	Course Code	Course Title	Course Objective	Expected Outcome
409	1JAR9	Workshop Practice (Photography/ Carpentry/ Model Making)	<ol style="list-style-type: none"> <li>1. To Develop Photographic Skills, to understand Simple Architectural Forms, Joinery and Construction Details Through Field Exercises and Model Making</li> <li>2. To acquire the skill in constructing three dimensional forms using different model making materials and equipment in different scale.</li> <li>3. To develop the knowledge of various types of welding through practical work.</li> </ol>	<p>CO1 Familiarize students with different types of materials and manufacturing techniques for creating art forms/ models.</p> <p>CO2 Understand different kinds of tools and machinery for production of design models.</p> <p>CO3 Sensitize the usage of various materials for production of art work.</p> <p>CO4 Apply different mediums and machine tools for production various types of art work.</p> <p>CO5 Create art forms with different mediums.</p>
410	1JAR10	Discipline & Extra Curricular Activities	<ol style="list-style-type: none"> <li>1. To develop understanding of community living and team work.</li> <li>2. To impart good habits and punctuality cleanliness.</li> <li>3. To develop the understanding of time management in the profession.</li> </ol>	<p>CO1 Develop his personality for farther team work.</p> <p>CO2 Perform well in the cooperate organizations.</p> <p>CO3 Time management which will make them a good professional.</p>
411	1JAR11	Basic Design & Field Trip	<ol style="list-style-type: none"> <li>1. The aim of the subject is to introduce to the students the design fundamentals and design vocabulary and enable them to apply the same in compositions and designs.</li> <li>2. To introduce the various facets of art and architecture and formal vocabulary of design.</li> <li>3. To understand the elements and principles of Basic Design as the building blocks of creative design and visual composition.</li> <li>4. To nurture creativity and sensitise the pupil to various design aspects.</li> </ol>	<p>CO1 Understand the qualities and effects of different elements and principles of design along with their composite fusion</p> <p>CO2 Understand and create the spaces and form through 2D and 3D Composition.</p> <p>CO3 Understand visualization and implementation of various design concepts.</p> <p>CO4 Learn the importance of the team work and enhancement of skills in expressing, demonstrations and presentation.</p> <p>CO5 Understand and create various 3D models with respect to anthropometry.</p>

## Course Outcomes

S. No.	Course Code	Course Title	Course Objective	Expected Outcome
412	2JAR1	Ecology & Environment	<ol style="list-style-type: none"> <li>1. The Understanding and Application of Basic Ecology and Ecological Systems with reference to build environment.</li> <li>2. To understand our ecosystem.</li> <li>3. To learn about the causes and prevention of air pollution, water pollution and land pollution.</li> <li>4. To study basic concepts of green architecture and awareness about nature and built heritage.</li> </ol>	<p>CO1 Aware the students about the scientific knowledge and current debates on the environment at three nested scales, including their interlink ages – Global, Regional and Local</p> <p>CO2 Enable the students to understand cause-and-effect relationships between various human, natural and climatic factors that impinges upon ecological systems and their linkages.</p> <p>CO3 To study basic concepts of green architecture and awareness about nature and built heritage.</p> <p>CO4 Learn global &amp; national environmental issues, the scale of impacts, important conventions, laws and policies in the field of biodiversity, and environmental protection</p> <p>CO5 Understand the application of Basic Ecology and Ecological Systems with reference to build environment.</p>
413	2JAR2	Construction Material-II	<ol style="list-style-type: none"> <li>1. The Understanding and Application of Basic Building Materials.</li> <li>2. To study the nature of materials and the use in the building.</li> <li>3. To study the manufacturing process of the building materials.</li> <li>4. To understand the physical and chemical properties by various tests of the materials.</li> <li>5. To understand the sources and extraction process of various building materials.</li> </ol>	<p>CO1 Analyse the nature of material and their practical application in field.</p> <p>CO2 Study the manufacturing process of the building materials.</p> <p>CO3 Learn the properties of various building materials.</p> <p>CO4 Understand the physical and chemical properties by various tests of the materials.</p> <p>CO5 Evaluate the best material required for construction.</p>
414	2JAR3	Architectural Structures-II	<ol style="list-style-type: none"> <li>1. The objective of the subject is to enable students to understand various codes, practices and design structural members.</li> <li>2. Basics theories and definitions.</li> <li>3. Understanding of Lifting machines and mechanical advantage.</li> </ol>	<p>CO1 Understand different types of loads, moments, stress and calculations</p> <p>CO2 Understand different types of column and beam design</p> <p>CO3 Understand different section modules.</p> <p>CO4 Understand different structure system</p> <p>CO5 Understand lift machines</p>

## Course Outcomes

S. No.	Course Code	Course Title	Course Objective	Expected Outcome
415	2JAR4	Introduction to Architecture	<ol style="list-style-type: none"> <li>1. To Orient the Student to Study of Architecture as Profession and Design Discipline.</li> <li>2. To understand the factors influencing architecture of a place.</li> <li>3. To produce the Vaastu and its science.</li> </ol>	<p>CO1 Learn the use of locally available materials in construction.</p> <p>CO2 Understand their responsibility as an architect towards the society.</p> <p>CO3 Learn how to apply Vaastu in buildings and the science behind using it.</p> <p>CO4 Understand the importance of the team work and enhancement of skills in expressing, demonstrations and presentation.</p> <p>CO5 Relate the architecture not on the sake of over exploiting of natural resources.</p>
416	2JAR5	Architectural Drawing-II	<ol style="list-style-type: none"> <li>1. To Develop Drawing Skills as Tools to Thinking, Visualization, and Representation of Design.</li> <li>2. Introduction of various terms involved in presenting a 3D model on a 2D paper.</li> <li>3. To enhance their imagination while covering 2D drawing into 3D model.</li> </ol>	<p>CO1 Develop the presentation skills.</p> <p>CO2 Enhance their imagination and creativity by developing of 3D models.</p> <p>CO3 Enhance their knowledge of anthropometry.</p> <p>CO4 Compose the architectural spaces in a design project</p> <p>CO5 To communicate architectural drawings with the help of various mediums</p>
417	2JAR6	Architectural Design (Basic Design & Field Trip)	<ol style="list-style-type: none"> <li>1. To understand architectural form, space and related qualities, exploration through fenestrations and facade treatment, material and expression</li> <li>2. To explore influence of climate and site conditions on architectural form.</li> <li>3. To understand the principals of aesthetics, structures.</li> </ol>	<p>CO1 Enhance the ability to integrate aspects such as climate, building material &amp; construction, and principles of visual arts into architectural design.</p> <p>CO2 Understand the measure drawings of small structure</p> <p>CO3 Understand the aesthetical terms.</p> <p>CO4 Learn the importance of the team work and enhancement of skills in expressing, demonstrations and presentation.</p> <p>CO5 Create architectural drawing with the raw figures, sketches and concept.</p>

## Course Outcomes

S. No.	Course Code	Course Title	Course Objective	Expected Outcome
418	2JAR7	Arts and Graphics-II	<ol style="list-style-type: none"> <li>1. Development of Graphic Skills, Ability and Comprehension. Establishing Significance of Art.</li> <li>2. To develop the graphics skills and the significance of art.</li> <li>3. To study the elements and principles of design.</li> <li>4. To develop the study of 3D and 3D compositions by using various mediums of colour.</li> <li>5. Understanding 3D sculpture or compositions through various mediums like clay, wood etc.</li> <li>6. To study the Indian history of art and major Indian art style.</li> </ol>	<p>CO1 Learn the principles and elements of art and design.</p> <p>CO2 Understand the graphics of 2D and 3D compositions through colours and by different medium like, clay, wood etc.</p> <p>CO3 Implement the art by studying the history of art of India.</p> <p>CO4 To construct the drawings of complex compositions</p> <p>CO5 To formulate the 2 dimensions into 3-dimension drawing using metric projection</p>
419	2JAR8	Building Construction-II	<ol style="list-style-type: none"> <li>1. The Construction Studio Work Should Demonstrate the Inter Dependence of the building Materials and Elements and their Understanding to Form Complete Building Envelop.</li> <li>2. To study the construction details of various building components like door, windows etc.</li> <li>3. To develop the knowledge of various materials used to design building elements.</li> <li>4. To study the types of building elements on the basics of materials and their use.</li> <li>5. To develop the skills of drawing various joinery details of these elements and their parts.</li> </ol>	<p>CO1 Understand the construction details of the openings in the building, roof system and flooring types.</p> <p>CO2 Understand the member along with fixtures and joinery details.</p> <p>CO3 Understand the flexibility and selection of materials as per their use.</p> <p>CO4 Understand different types of materials according to their properties</p> <p>CO5 Understand the application of building material in various terms</p>
420	2JAR9	Introduction to Computer-II	<ol style="list-style-type: none"> <li>1. To develop the skills of drafting software and management of data in related software.</li> <li>2. To develop the 2d drafting skills with drafting software</li> <li>3. To develop the 3D drafting skills and software.</li> </ol>	<p>CO1 Learn the use of software to enhance the presentation skills and visualization through software</p> <p>CO2 Understand the use of various presentation software like Photoshop, coral draw etc.</p> <p>CO3 Prepare the Interior and Exterior 3D view with material specification.</p> <p>CO4 Learn the application of different 3d software</p> <p>CO5 Understand the techniques of presentation skills</p>

## Course Outcomes

S. No.	Course Code	Course Title	Course Objective	Expected Outcome
421	2JAR10	Discipline & Extra Curricular Activities	<ol style="list-style-type: none"> <li>1. To develop understanding of community living and team work.</li> <li>2. To impart good habits and punctuality cleanliness.</li> <li>3. To develop the understanding of time management in the profession.</li> </ol>	<p>CO1 Develop his personality for farther team work.</p> <p>CO2 Perform well in the cooperative organizations.</p> <p>CO3 Time management which will make them a good professional.</p>
422	3JAR1	History of Architecture -I	<ol style="list-style-type: none"> <li>1. To Develop understanding of social, material and structural attributes, That shaped and architecture in different periods, also to study how interaction and communication with different cultures influenced and reshaped Architecture of India.</li> <li>2. Study the chronological evolution and impacts of geographic, climatic, geological, religious, political and socio-cultural backgrounds of Indian ancient and Buddhist architecture – in relationship to materials and techniques of construction.</li> <li>3. Study of different types of architectural temple style, used in ancient period.</li> </ol>	<p>CO1 Identify all the aspects related to the design of historic monuments</p> <p>CO2 Understand of how different architectural styles evolved within the restraints imposed by prevalent social and cultural environment, availability of materials, climate and geography</p> <p>CO3 Identify various architectural solutions were arrived at within the above mentioned restraints</p> <p>CO4 Develop the construction technology in that period</p> <p>CO5 Understand Architectural ornamentation of that period</p>
423	3JAR2	Building Science-I (Climatology)	<ol style="list-style-type: none"> <li>1. Understanding of inter relation of built environment with material environment Also issues of climatic balance in traditional and contemporary built Environments.</li> <li>2. To study the fundamentals of climatology and its application in climate responsive building design.</li> <li>3. To know different types of climate of world and India.</li> <li>4. To study local material and their construction in different parts of India.</li> </ol>	<p>CO1 Understand the list of different elements of climate.</p> <p>CO2 Classify the factors of comfort, and to infer the impact of these factors on built structures.</p> <p>CO3 Examine through mathematical formulae the thermal comforts levels of built form</p> <p>CO4 Assess the effects of site, sun and wind in building response.</p> <p>CO5 Design the shelters complimenting the different climates and geographical factors</p>

## Course Outcomes

S. No.	Course Code	Course Title	Course Objective	Expected Outcome
424	3JAR3	Construction Material-III	<ol style="list-style-type: none"> <li>1. To introduce and familiar student with/to composite and multiple application of materials.</li> <li>2. Study of physical, chemical, visual and textural properties of materials their Application and use in building and building components as applied in buildings.</li> <li>3. To study the use and types of various materials along with their physical and chemical tests.</li> <li>4. To understand the source and manufacturing process of various materials.</li> </ol>	<p>CO1 Understand the physical, chemical, visual and textural properties of materials their Application and use in building and building components as applied in buildings.</p> <p>CO2 Understand the composite and multiple application of materials.</p> <p>CO3 Understand the use and types of various materials along with their physical and chemical tests.</p> <p>CO4 Learn the source and manufacturing process of various materials.</p> <p>CO5 Understand the latest materials and their construction technology.</p>
425	3JAR4	Architectural Structures-III	<ol style="list-style-type: none"> <li>1. The objective of this course is to introduce students' various types of column and foundation.</li> <li>2. To impart knowledge about Determination of wate, bearing capacity of soil and footings.</li> <li>3. To make the student familiar with latest computational techniques and software used for structural analysis.</li> </ol>	<p>CO1 Understand the knowledge of foundation and column design.</p> <p>CO2 Understand soil bearing, foundation and footings.</p> <p>CO3 Gain the knowledge of structural analysis of any building structure.</p> <p>CO4 Apply the knowledge in design for foundation details</p> <p>CO5 Evaluate the calculations of test of soil</p>
426	3JAR5	Architectural Design-I	<ol style="list-style-type: none"> <li>1. To understand architectural form, space and related qualities, exploration through fenestrations and facade treatment, material and expression</li> <li>2. To explore influence of climate and site conditions on architectural form.</li> <li>3. To explore the deign evolution.</li> </ol>	<p>CO1 Understand architectural form, space and related qualities, exploration through fenestrations and facade treatment, material and expression</p> <p>CO2 Explore influence of climate and site conditions on architectural form.</p> <p>CO3 Explore the conceptualization, idea generation and design evolution.</p> <p>CO4 Learn the importance of the team work and enhancement of skills in expressing, demonstrations and presentation.</p> <p>CO5 Create architectural drawing with the raw figures, sketches and concept.</p>

## Course Outcomes

S. No.	Course Code	Course Title	Course Objective	Expected Outcome
427	3JAR6	Theory of Design-I	<ol style="list-style-type: none"> <li>1. To study the design philosophies of different architects.</li> <li>2. To learn how to apply the various design principles in buildings.</li> <li>3. To study the biographies of famous architects of 18th world.</li> <li>4. To learn different movements in architectures.</li> </ol>	<p>CO1 Understand the design philosophies of different architects.</p> <p>CO2 Apply the various design principles in buildings.</p> <p>CO3 Understand the study the biographies of famous architects of the world.</p> <p>CO4 Understand the Architectural scale and its application.</p> <p>CO5 Analyse the relationship of different spaces in a building plans and to relate plans, elevations and sections together.</p>
428	3JAR7	Arts & Graphics-III	<ol style="list-style-type: none"> <li>1. To understand the graphic skills, presentation techniques and model making.</li> <li>2. To understand the murals, sculpture and rendering with model making.</li> <li>3. Understanding of 3d forms and principals of design.</li> </ol>	<p>CO1 Develop the skills of selection of materials as per requirements.</p> <p>CO2 Understand the Scale and Proportion through model making.</p> <p>CO3 To understand the theory of colours and design principals.</p> <p>CO4 To understand the presentation skills through sketching and model making</p> <p>CO5 To identify the theory of the spaces with all its supportive elements like colour, geometry etc</p>
429	3JAR8	Building Construction-III	<ol style="list-style-type: none"> <li>1. To study the construction details of various type of foundations and staircase, ramps.</li> <li>2. To study the types and construction details of foundation.</li> <li>3. To study of staircase and ramp system.</li> </ol>	<p>CO1 Understand the various types of foundations and there use in the buildings</p> <p>CO2 To understand the various components of the buildings</p> <p>CO3 To recognize the use of construction materials with their required proportion</p> <p>CO4 To analyse the use of load supporting members along with their design</p> <p>CO5 To create the construction drawings on the acquired knowledge</p>
430	3JAR9	Structure Lab – I	<ol style="list-style-type: none"> <li>1. To study the different types of aggregates and their application.</li> <li>2. To study the building materials like bricks and their physical characteristics.</li> <li>3. To study of strength test of materials.</li> </ol>	<p>CO1 Understand the usage of aggregate and advantages or disadvantages.</p> <p>CO2 Understand the application of building materials and aggregates.</p> <p>CO3 Understand the soil bearing capacity.</p> <p>CO4 Analyse the use of soil according to condition</p> <p>CO5 Understand the use of footing system</p>

## Course Outcomes

S. No.	Course Code	Course Title	Course Objective	Expected Outcome
431	3JAR10	Computer Application in Architecture-I	<ol style="list-style-type: none"> <li>1. To apprise the students of the existing Presentation related software like word processors, drawing tools and photo editors etc.</li> <li>2. To introduce the drafting software and its importance/application in architecture.</li> <li>3. To study the knowledge of plan, section and elevation through drafting software.</li> <li>4. To introduce the use and requirement of various peripheral hardware.</li> </ol>	<p>CO1 Understand the use of drafting tools in preparing the presentation drawings</p> <p>CO2 Recognize the use of peripheral hardware devices</p> <p>CO3 Apply the knowledge of basics of design with the graphic tools</p> <p>CO4 Understand and check the basics of design by relating free hand drawings with graphical software</p> <p>CO5 Understand the use of architectural tools for improvement of professional skills</p>
432	3JAR11	Discipline & Extra Curricular Activities	<ol style="list-style-type: none"> <li>1. To develop understanding of community living and team work.</li> <li>2. To impart good habits and punctuality cleanliness.</li> <li>3. To develop the understanding of time management in the profession.</li> </ol>	<p>CO1 Develop his personality for further team work.</p> <p>CO2 Perform well in the cooperative organizations.</p> <p>CO3 Time management which will make them a good professional.</p>
433	4JAR1	History of Architecture-II	<ol style="list-style-type: none"> <li>1. To develop understanding of architecture as society's primary response to simple needs and problems related to shelter and complete problems related to natural and man-made environment both in qualitative and quantitative terms.</li> <li>2. To understand evolution of Architectural Styles as response to prevalent socio-cultural, technological and intellectual complexities of societies.</li> <li>3. To understand the social, economic and architectural values of different style of cultures.</li> </ol>	<p>CO1 Understand the difference between various architectural styles and construction technology.</p> <p>CO2 Understand Different type of culture like western culture, Indian, Egyptian.</p> <p>CO3 Understand the Principles and social aspects of their cultures.</p> <p>CO4 Learn the importance of the team work and enhancement of skills in expressing, demonstrations and presentation.</p> <p>CO5 Understand the evolution of structures in terms of form and design in the medieval time in west Asiatic region and eastern European continuum.</p>
434	4JAR2	Surveying	<ol style="list-style-type: none"> <li>1. Principal and rule of Surveying</li> <li>2. Different Surveying Methods and related instruments</li> <li>3. Use of field book for different type of survey</li> <li>4. Use of different survey instruments</li> </ol>	<p>CO1 Interact technically with surveyors</p> <p>CO2 Prepare and interpret survey drawings</p> <p>CO3 Gain a broad understanding of Land Survey</p> <p>CO4 Get accustomed with the angular and linear measurements</p> <p>CO5 Understand different type of surveys</p>

## Course Outcomes

S. No.	Course Code	Course Title	Course Objective	Expected Outcome
435	4JAR3	Construction Materials-IV	<ol style="list-style-type: none"> <li>1. To introduce the details about the metals and alloys.</li> <li>2. To study the physical and chemical properties of metals and alloys</li> <li>3. To develop the knowledge of structural and non-structural application of eta and alloys.</li> </ol>	<p>CO1 Learn various properties of metals in their use in a building.</p> <p>CO2 Understand the use of metals and alloys in various building components like door, window.</p> <p>CO3 earn various protective measures and techniques to preserve metals</p> <p>CO4 Understand the advantages and disadvantages of the materials.</p> <p>CO5 Understand the skills of the selection of the materials and usage</p>
436	4JAR4	Architectural Structures-IV	<ol style="list-style-type: none"> <li>1. SI Codes and practices</li> <li>2. Design simple RCC structural members</li> <li>3. Manufacturing process of different materials.</li> </ol>	<p>CO1 Understand the RCC as structural material</p> <p>CO2 Understand the behaviours of RCC structural members</p> <p>CO3 Create designs of simple structural members.</p> <p>CO4 Understand the RCC construction system</p> <p>CO5 Understand the load calculation</p>
437	4JAR5	Architectural Design-II (Including Measured Drawing Camp)	<ol style="list-style-type: none"> <li>1. To understand architectural form, space and related qualities, exploration through fenestrations and facade treatment, material and expression</li> <li>2. To explore influence of climate and site conditions on architectural form.</li> <li>3. To explore the different types of façade, deign.</li> </ol>	<p>CO1 Understand architectural form, space and related qualities, exploration through fenestrations and facade treatment, material and expression</p> <p>CO2 Explore influence of climate and site conditions on architectural form.</p> <p>CO3 Explore the different types of façade deign.</p> <p>CO4 Understand the importance of the team work and enhancement of skills in expressing, demonstrations and presentation.</p> <p>CO5 Create architectural drawing with the raw figures, sketches and concept.</p>
438	4JAR6	Theory of Design-II	<ol style="list-style-type: none"> <li>1. To study the design philosophies of different architects.</li> <li>2. To learn how to apply the various design principles in buildings.</li> <li>3. To study the biographies of famous architects of lth world.</li> <li>4. To learn different movements in architecture</li> </ol>	<p>CO1 Understand the relation between various materials, spaces and design principles.</p> <p>CO2 Create development of design from them. Learnt about movements in architecture and</p> <p>CO3 Learn about Louis Sullivan work and their philosophy.</p> <p>CO4 Learn about Meis Van Der-Rohework and their philosophy.</p> <p>CO5 Learn about Le Corbusierwork and their philosophy.</p>

## Course Outcomes

S. No.	Course Code	Course Title	Course Objective	Expected Outcome
439	4JAR7	Art & Graphics-IV	<ol style="list-style-type: none"> <li>1. To understand the graphic skills, presentation techniques and model making.</li> <li>2. To understand the murals, sculpture and rendering with model making.</li> <li>3. To understand the uses of material for model making.</li> </ol>	<p>CO1 Understand the importance of models in designing</p> <p>CO2 Develop the techniques to enhance the presentation drawings</p> <p>CO3 Analyse the various aspects (light and shadows) through model making</p> <p>CO4 Enhance the thinking process by understanding the presentation techniques</p> <p>CO5 Create the ideas of exterior and interior spaces by gaining this course knowledge</p>
440	4JAR8	Building Construction-IV	<ol style="list-style-type: none"> <li>1. To study the construction details of various type of foundations and trusses.</li> <li>2. To study the types and construction details of roof system.</li> <li>3. To study of different types of material for building construction.</li> </ol>	<p>CO1 Understand the flexibility of material(steel) in different parts of a building</p> <p>CO2 Understand the joinery details of different materials with steel used in various parts of steel structures</p> <p>CO3 Apply the knowledge of load and construct the components (roof, foundation, beam, columns) of the steel structure</p> <p>CO4 Understand the use of roofing materials and their joinery with steel structures</p> <p>CO5 Create the construction drawings as per requirement by acquired the knowledge of the steel structures and their details</p>
441	4JAR9	Computer Application in Architecture-II	<ol style="list-style-type: none"> <li>1. To develop the skills of drafting software and management of data in related software.</li> <li>2. To develop the 3d drafting skills with drafting software</li> <li>3. To develop the calculation skills through various software like MS EXCEL.</li> </ol>	<p>CO1 Remember the 3Dimensional spaces by using the computer software</p> <p>CO2 Understand the joinery details of different materials with steel used in various parts of steel structures</p> <p>CO3 Understand the supportive features like (pie charts, graphs, tables) and their use in preparing data</p> <p>CO4 Understand the basic calculations with software</p> <p>CO5 Demonstrate an understanding of three-dimensional conceptual ideas and their application in architectural drawings</p>

## Course Outcomes

S. No.	Course Code	Course Title	Course Objective	Expected Outcome
442	4JAR10	Surveying Lab	<ol style="list-style-type: none"> <li>1. Principal and rule of Surveying</li> <li>2. Different Surveying Methods and related instruments</li> <li>3. Use of field book for different type of survey</li> <li>4. Use of different survey instruments</li> </ol>	<p>Understand the primary surveying techniques adopted in past years.</p> <p>Understand different Surveying Methods and related instruments.</p> <p>Learn and understand the use of field book for different type of survey.</p> <p>Understand the role of elevations and determination of levels at various surface patterns, and perform its practical application in the field.</p> <p>Understand the concept of contouring.</p>
443	4JAR11	Discipline & Extra Curricular Activities	<ol style="list-style-type: none"> <li>1. To develop understanding of community living and team work.</li> <li>2. To impart good habits and punctuality cleanliness.</li> <li>3. To develop the understanding of time management in the profession.</li> </ol>	<p>CO1 Develop his personality for farther team work.</p> <p>CO2 Perform well in the cooperate organizations.</p> <p>CO3 Time management which will make them a good professional.</p>
444	5JAR1	History of Architecture-III	<ol style="list-style-type: none"> <li>1. To study the styles, form and method of construction of the Renaissance period, Modern Architecture</li> <li>2. This course is in continuation of the previous course of History of Architecture and aims to understand the evolution of architecture and its transformation in the contemporary times, both at the international end level well as at the national level.</li> <li>3. To study of Different type of architecture style of world.</li> </ol>	<p>CO1 Develop critical analysis of the contributing factors and an overview of the issues facing the contemporary world. A sound knowledge base of the processes and events that shaped the architecture of the present</p> <p>CO2 Understand of different type of civilization and their architecture style</p> <p>CO3 Understand of architectural elements and principles.</p> <p>CO4 Learn the importance of the team work and enhancement of skills in expressing, demonstrations and presentation.</p> <p>CO5 Understand the term Renaissance and the evolution of structures during this era.</p>

## Course Outcomes

S. No.	Course Code	Course Title	Course Objective	Expected Outcome
445	5JAR2	Building Services—I (Water Supply & Sanitation)	<ol style="list-style-type: none"> <li>1. To provide inputs on basic building services like water supply, sanitation, storm water, refuse &amp; fire through conceptual understanding of system, process, methods, network, materials, &amp; resources.</li> <li>2. To provide knowledge regarding working of systems with sustainable options in vogue.</li> <li>3. To provide knowledge of sewer system of city and house level.</li> </ol>	<p>CO1 Understand the process &amp; systems with installation of equipment's related to the services identified</p> <p>CO2 Learn Sanitary system of buildings.</p> <p>CO3 Learn Planning and design for disposal of urban/rural effluent.</p> <p>CO4 Learn drainage system and installation of pipes</p> <p>CO5 learn building envelop in terms of services</p>
446	5JAR3	Construction Materials-V	<ol style="list-style-type: none"> <li>1. To understand the methods of protecting a building from dampness.</li> <li>2. To understand the techniques of thermal and sound insulation via building materials and techniques.</li> <li>3. To understand various methods to make a building fire &amp; safe.</li> </ol>	<p>CO1 Understand the application of waterproofing methods for different parts of the building.</p> <p>CO2 Understand the climate responsive buildings and the various materials and techniques used for thermal insulation.</p> <p>CO3 Understand the meaning of sound insulation and its application with or without materials at different places.</p> <p>CO4 Understand various methods to make a building fire &amp; safe</p> <p>CO5 Learn different types of interior finishes.</p>
447	5JAR4	Architectural Structures-V	<ol style="list-style-type: none"> <li>1. The objective of the subject is to enable students to understand RCC codes and practices and design RCC structural members.</li> <li>2. Develop knowledge of Beams and columns.</li> <li>3. Develop knowledge of footing and foundations.</li> </ol>	<p>CO1 Design RCC structural members like beams, slabs etc.</p> <p>CO2 Design RCC combined and eccentric footings.</p> <p>CO3 Design RCC structures.</p> <p>CO4 Understand RC.C. structure</p> <p>CO5 Understand the strength of R.C.C. members</p>
448	5JAR5	Architectural Design-III & Field Trip	<ol style="list-style-type: none"> <li>1. Climate in design development process.</li> <li>2. Site contours as a design opportunity.</li> <li>3. Local materials and construction techniques.</li> </ol>	<p>CO1 Design climate, site and topography responsive buildings.</p> <p>CO2 Design according to the context of vernacular architecture</p> <p>CO3 Design process and solution for simple public buildings.</p> <p>CO4 Learn the importance of the team work and enhancement of skills in expressing, demonstrations and presentation.</p> <p>CO5 Understand the local building bylaws and follow up in the design.</p>

## Course Outcomes

S. No.	Course Code	Course Title	Course Objective	Expected Outcome
449	5JAR6	Quantity Surveying & Specification/ ESTIMATING & COSTING	<ol style="list-style-type: none"> <li>1. To develop a real-time judgment of the quality and quantity of materials, quantity and classes of skilled and unskilled laborers and tools and plants required for the project</li> <li>2. To develop skill for precise and approximate estimations.</li> <li>3. To be able to estimate and specify quantities of various items of material and work involved in an architectural project.</li> </ol>	<p>CO1 Understand concept and types of estimation and rate analysis with its importance in architectural projects</p> <p>CO2 Execute and implement the appropriate methods for preparing the estimates and valuation reports</p> <p>CO3 Prepare the bills of the construction projects by learning the methods of estimation</p> <p>CO4 Understand the use of Indian standard specification and PWD/ CPWD handbook in estimation of architectural projects</p> <p>CO5 Evaluate and compare the cost of the projects at every stage and analysing the documents</p>
450	5JAR7	Sociology	<ol style="list-style-type: none"> <li>1. Basic of rural and urban society</li> <li>2. Understanding society and its issues</li> <li>3. Understanding of urbanization and modernization.</li> </ol>	<p>CO1 Grasp the fundamental economics of the Indian society</p> <p>CO2 Understand and apply economic principles in building construction projects.</p> <p>CO3 Understand Features of rural and urban society.</p> <p>CO4 Learn the importance of the team work and enhancement of skills in expressing, demonstrations and presentation.</p> <p>CO5 Resolve concerns at community level which is directly or indirectly related to architecture.</p>
451	5JAR8	Building Construction-V	<ol style="list-style-type: none"> <li>1. To study construction of different protective finishes in building design.</li> <li>2. To develop the skills of various floors, walls and roof finishes.</li> <li>3. To study the construction details of various finishes along with the material and their applications.</li> </ol>	<p>CO1 Understand the various types of finishing techniques and their use in different parts of building</p> <p>CO2 Evaluate the best suitable flooring materials and their types</p> <p>CO3 Understand the areas of the buildings where preventive measures are required from water and fire their processes with construction details</p> <p>CO4 Develop the knowledge of the materials, their use and their joineries as per requirement</p> <p>CO5 Modify the techniques more efficiently as per requirement</p>

## Course Outcomes

S. No.	Course Code	Course Title	Course Objective	Expected Outcome
452	5JAR9	Computer Application in Architecture-III	<ol style="list-style-type: none"> <li>1. Photoshop skills to create technically correct and presentable three-dimensional building models.</li> <li>2. Skills to render and animate building models.</li> <li>3. Understanding of lighting system in architecture.</li> </ol>	<p>CO1 Recognize the use of CAD tools and its techniques for architectural designing</p> <p>CO2 Prepare the exterior and interior views of building</p> <p>CO3 Relate the parameters of handmade drawings with the CAD tools</p> <p>CO4 Demonstrate an understanding of application of light backgrounds</p> <p>CO5 Prepare and improve the conceptual ideas and presentation renderings as a design presentation tool for various purposes</p>
453	5JAR10.1	Elective-I - Interior Design	<ol style="list-style-type: none"> <li>1. To develop sensitivity to related dimension of architecture like arts and crafts, traditional ornamentation.</li> <li>2. To look interior spaces are soul of a building that makes building functional and pleasant.</li> <li>3. To study impact of different colour schemes and materials on humans.</li> <li>4. Basics of interior design such as interior spaces, its types and various components,</li> <li>5. treatments, finishes, etc.</li> <li>6. Indoor lighting, furniture design materials selection for different environments.</li> </ol>	<p>CO1 Create different design schemes for different spaces</p> <p>CO2 Understand the impact of different elements such as furniture and decorative features and upholstery.</p> <p>CO3 Generate character of different spaces according to the function.</p> <p>CO4 Understand the intricacies of interior space planning and its historical background.</p> <p>CO5 Understand the modern trends in the field.</p>
454	5JAR10.2	Elective-I - History of Rajasthan Art	<ol style="list-style-type: none"> <li>1. To develop understanding of Rajasthani Art their techniques and their styles in</li> <li>2. Different periods and now these are used in Architecture.</li> <li>3. Study development from prehistoric to modern period.</li> <li>4. Study different types of planning styles of this rich culture.</li> </ol>	<p>CO1 Develop understanding of Rajasthani Art their techniques in architecture.</p> <p>CO2 Enable to identify different periods in art and culture and how these are used in Architecture.</p> <p>CO3 Learn the analytical study of development from prehistoric to modern period.</p> <p>CO4 Study different types of planning styles of this rich culture.</p> <p>CO5 Study regional painting styles.</p>

## Course Outcomes

S. No.	Course Code	Course Title	Course Objective	Expected Outcome
455	5JAR11	Discipline & Extra Curricular Activities	<ol style="list-style-type: none"> <li>1. To develop understanding of community living and team work.</li> <li>2. To impart good habits and punctuality cleanliness.</li> <li>3. To develop the understanding of time management in the profession.</li> </ol>	<p>CO1 Develop his personality for farther team work.</p> <p>CO2 Perform well in the cooperate organizations.</p> <p>CO3 Time management which will make them a good professional.</p>
456	5JAR12	Landscape and site planning	<ol style="list-style-type: none"> <li>1. Understanding the works and philosophy of Contemporary Architecture.</li> <li>2. Introduction of landscape element and their relation with the built environment.</li> <li>3. Role of landscape in sustainable development and environment.</li> <li>4. Study of landscape with historical perspective.</li> </ol>	<p>CO1 Understand the works and philosophy of Contemporary Architecture in landscaping.</p> <p>CO2 Understand the landscape elements and their relation with the built environment.</p> <p>CO3 To learn the role of landscape in sustainable development and maintaining a balanced ecosystem.</p> <p>CO4 Study of landscape with historical perspective.</p> <p>CO5 To learn about native trees and plants, their nature , benefits and their practical application.</p>
457	6JAR1	History of Architecture-IV	<ol style="list-style-type: none"> <li>1. Understanding the works and philosophy of Contemporary Architecture.</li> <li>2. Study of modern, postmodern and post-independence architecture.</li> <li>3. Study of various famous building of these periods.</li> </ol>	<p>CO1 Understand the difference between history through time period.</p> <p>CO2 Gain the Knowledge about different architectural elements of different time period's construction style and construction techniques.</p> <p>CO3 Gain the Knowledge of different design pattern and philosophy of architect in these periods.</p> <p>CO4 Learn architectural style of different eras</p> <p>CO5 Learn different design philosophies</p>

## Course Outcomes

S. No.	Course Code	Course Title	Course Objective	Expected Outcome
458	6JAR2	Building services-II (Electrical Services)	<ol style="list-style-type: none"> <li>1. Basic laws and terminologies related to electrical services in buildings.</li> <li>2. Electrical requirements for given situation, its calculations and design.</li> <li>3. Artificial Illumination and its application in buildings.</li> <li>4. Space and facility requirement for provision of electrical supply from State electricity mains to the building / layout with emphasis on load calculation (thumb rules) wiring systems, distribution panels etc within small and medium size buildings and layouts.</li> <li>5. To facilitate the understanding of Architectural Lighting Design based on the fundamentals of lighting and its components.</li> </ol>	<p>CO1 Interact technically with electrical and illumination experts</p> <p>CO2 Design efficient electrical layouts with their circuit diagrams</p> <p>CO3 Design efficient illumination levels for various activities and spaces.</p> <p>CO4 Understand the space requirements and distribution of electrical service provisions.</p> <p>CO5 Understand the lighting principles and different electric light sources available</p>
459	6JAR3	Construction Materials–VI	<ol style="list-style-type: none"> <li>1. To introduced the details about the precast, pre stresses constructions.</li> <li>2. To study various low-cost materials with the physical properties.</li> <li>3. Application of all building materials for designing purpose.</li> </ol>	<p>CO1 Gain the knowledge of various building material.</p> <p>CO2 Understand the application of new technology</p> <p>CO3 Learn how to celebrate new technology with old construction and techniques.</p> <p>CO4 Understand the advantages and disadvantages of the LOW COST materials.</p> <p>CO5 Develop the skills of the selection of the materials and usage</p>
460	6JAR4	Architectural Structures–VI	<ol style="list-style-type: none"> <li>1. To introduce structural material i.e. structural steel and their mechanical properties, familiarize various elements/ component of steel structures,</li> <li>2. Analysis of structure and behaviour of each element under static gravity loading.</li> <li>3. Introduce the concept of design of structural members of steel structure building subjected to tension, compression, shear and bending.</li> </ol>	<p>CO1 Learn structural system and its use in buildings.</p> <p>CO2 Understand the steel structures applications in buildings.</p> <p>CO3 Understand the designing of structural members</p> <p>CO4 Understand the joint techniques</p> <p>CO5 Understand the beams and column design</p>

## Course Outcomes

S. No.	Course Code	Course Title	Course Objective	Expected Outcome
461	6JAR5	Architectural Design-IV & Field Trip	<ol style="list-style-type: none"> <li>1. How to design in developing urban areas.</li> <li>2. Characteristics of a public building</li> <li>3. Understanding correlation between function, structure, material, construction services.</li> </ol>	<p>CO1 Design for multiple groups of users with due consideration to site, climate, services, bye-laws.</p> <p>CO2 Understand the relationship between design and urban setting.</p> <p>CO3 Derive a design process and design solution for a public building.</p> <p>CO4 Learn the importance of the team work and enhancement of skills in expressing, demonstrations and presentation</p> <p>CO5 Understand the local building bylaws and follow up in the design.</p>
462	6JAR6	Working Drawings	<ol style="list-style-type: none"> <li>1. Architectural detailing and execution drawings.</li> <li>2. The building design is executed through several construction drawings prepared in sequence and other constructional details along with it, all such drawings in a set of architectural drawings and other allied services drawings such as structural design drawings, mechanical services drawings and other services drawings for smooth execution of construction.</li> <li>3. The objective of this course is to study and prepare detailed construction drawings to facilitate ease of construction with these execution/working drawings to larger scales for more clarity of details.</li> </ol>	<p>CO1 Impart enough skill to prepare working drawings for the ease of construction with proper workmanship assurance in accordance with the specifications and the contract document and to the satisfaction of the Architect.</p> <p>CO2 Implement drawings on site.</p> <p>CO3 Understand the work process and time management of work on site.</p> <p>CO4 Understand the space utilization on construction time</p> <p>CO5 Balance with environment on and after construction</p>
463	6JAR7	Building Economics	<ol style="list-style-type: none"> <li>1. Basic principles of building economics at macro and micro levels</li> <li>2. Understanding society and its issues</li> <li>3. Understanding the demand of supply system and consumption.</li> </ol>	<p>CO1 Understand and apply economic principles in building construction projects.</p> <p>CO2 Understand the General economic concepts and relating their relevance in architectural projects</p> <p>CO3 Understand the Globalization and impact of global economy on India.</p> <p>CO4 Understand the concept of money, banking and bank credits, cost and cost indices inflation</p> <p>CO5 Develop the skills to handle the clients and serving the proper financial assistance</p>

## Course Outcomes

S. No.	Course Code	Course Title	Course Objective	Expected Outcome
464	6JAR8	Building Construction–VI	<ol style="list-style-type: none"> <li>1. To study construction of north light and aluminium sections.</li> <li>2. Study of Different type of walls like curtain wall.</li> <li>3. Study of Structural member like lintel, sill roof etc.</li> </ol>	<p>CO1 recognise the various glazing techniques like structural glazing, curtain wall construction and its advantages,</p> <p>CO2 understand the joinery details of metals in different building elements (doors, windows)</p> <p>CO3 apply the properties of metal and its use in creating various techniques used in building</p> <p>CO4 evaluate the selection of light gaining techniques like sky light, north light and their use as per climate</p> <p>CO5 develop the knowledge about the pre cast constructions and its necessary details</p>
465	6JAR9.1	Elective–II - Construction Management	<ol style="list-style-type: none"> <li>1. To understand the principles and need of construction management.</li> <li>2. To introduce different management techniques suitable for planning and constructional projects.</li> <li>3. To introduce and explore the management system for accomplishing the task efficiently in terms of both time and cost.</li> </ol>	<p>CO1 Learn different management techniques suitable for planning and constructional projects.</p> <p>CO2 Understand the course of a work from the start to the finish to analyses before the commencement of the project</p> <p>CO3 Learn how to manage different construction activity with their time and calculation of time management.</p> <p>CO4 Learn how to evaluate site work</p> <p>CO5 able to coordinate with different team at a same time in different projects.</p>
466	6JAR9.2	Elective–II – Sustainable Architecture	<ol style="list-style-type: none"> <li>1. To introduce the students to the theoretical and practical aspects of sustainable design and the various technologies involved in executing them. To familiarize the student with some of the acclaimed sustainable buildings with various tools, design methodology, resource optimization and innovative approaches to eco-design within the past decade.</li> <li>2. Understanding of different green building material.</li> <li>3. Understanding Different passive techniques.</li> </ol>	<p>CO1 Conceptualization of large span constructions</p> <p>CO2 Learnt how to design comfort space.</p> <p>CO3 Learnt different strategy of natural cooling and heating process</p> <p>CO4 Learn balancing between design and environment</p> <p>CO5 Use of material according to climate</p>

## Course Outcomes

S. No.	Course Code	Course Title	Course Objective	Expected Outcome
467	6JAR9.3	Low cost Construction and Techniques	<ol style="list-style-type: none"> <li>1. To understand the various low-cost design systems.</li> <li>2. Understand use of materials, construction and execution techniques in design of low-cost buildings.</li> <li>3. Understand process of construction technique.</li> </ol>	<p>CO1 To study the traditional materials and techniques related to low cost construction.</p> <p>CO2 To study and analyse the works of different architects who have worked in low cost construction.</p> <p>CO3 To study the locally available low-cost materials in different regions.</p> <p>CO4 To understand the use of materials, construction and execution techniques in design of low-cost buildings.</p> <p>CO5 To understand the planning and designing aspects of low-cost houses.</p>
468	6JAR9.4	Elective-II - Design for Disabled	<ol style="list-style-type: none"> <li>1. To create awareness about the concept of 'access for all' to public buildings / premises and universal design.</li> <li>2. To sensitise students to understand the importance of designing barrier free built environments.</li> <li>3. To provide an overview of the barrier free design requirements and legislative obligations.</li> </ol>	<p>CO1 To enable students to learn about various especially able people and their respective requirements to lead a normal life.</p> <p>CO2 To sensitize students to understand the importance of designing barrier free built environments</p> <p>CO3 To learn the application of barrier free design at different public spaces.</p> <p>CO4 To understand the implementation of various factors in existing and new buildings.</p> <p>CO5 To thoroughly study the norms prepared by the government for specially challenged people.</p>
469	6JAR10	Computer Application in Arch-IV	<ol style="list-style-type: none"> <li>1. Three dimensional explorations and presentations.</li> <li>2. Skills and information to build comprehensive Building Models using appropriate Digital software.</li> <li>3. Understanding of Software for improve working time efficiency.</li> </ol>	<p>CO1 To recognize the use of CAD tools and its techniques for architectural designing</p> <p>CO2 To prepare the exterior and interior views of building</p> <p>CO3 To relate the parameters of handmade drawings with the CAD tools</p> <p>CO4 To demonstrate an understanding of application of light backgrounds</p> <p>CO5 To prepare and improve the conceptual ideas and presentation renderings as a design presentation tool for various purposes</p>

## Course Outcomes

S. No.	Course Code	Course Title	Course Objective	Expected Outcome
470	6JAR11	Educational Tour	<ol style="list-style-type: none"> <li>1. Practical understanding of architecture and people.</li> <li>2. Understanding of socio culture of different locations.</li> <li>3. Understanding the aesthetic value of urban fabrics.</li> </ol>	CO1 Effective learning CO2 Personal Development CO3 Deepen social and architectural knowledge CO4 Learning the importance of the team work and enhancement of skills in expressing, demonstrations and presentation. CO5 Enhances Perspective
471	6JAR12	Discipline & Extra Curricular Activities	<ol style="list-style-type: none"> <li>1. To develop understanding of community living and team work.</li> <li>2. To impart good habits and punctuality cleanliness.</li> <li>3. To develop the understanding of time management in the profession.</li> </ol>	CO1 Develop his personality for farther team work. CO2 Perform well in the cooperate organizations. CO3 Time management which will make them a good professional.
472	7JAR1	Contract Documents & Byelaws	<ol style="list-style-type: none"> <li>1. Architectural practice and building regulations.</li> <li>2. To provide students insight of building codes and norms, their need and nature of building codes, standards and regulations.</li> <li>3. Understanding of bylaws according to their location and type of construction.</li> </ol>	CO1: Gauge the importance of building regulations and byelaws in development. CO2: Apply these to actual building design. CO3: Application of bylaws in special economic zones areas. CO4: Design limitation as per norms CO5: Learn the work process of excitation with limitations
473	7JAR2	Building Services-III(Mechanical Services)	<ol style="list-style-type: none"> <li>1. Understanding mechanical services for building design.</li> <li>2. The aim of the course is to respond to the space and system requirements for Mechanical Systems and Services associated with the building and its premises including electro-mechanical means of vertical transportation in buildings and HVAC services in the building.</li> <li>3. Understanding of intelligent buildings / Building Automation System and their major components and integration.</li> </ol>	CO1: To inculcate a fair understanding of integration of various mechanical systems and services. CO2: Implication on architectural space design and facilitation. CO3: Application and importance of psychometric chart in planning CO4: Design a building with fire safety norms CO5: Uses of MEP services

## Course Outcomes

S. No.	Course Code	Course Title	Course Objective	Expected Outcome
474	7JAR3	Building Science-II (Acoustics & Illumination)	<ol style="list-style-type: none"> <li>1. Understanding Acoustics and Illumination in building designs.</li> <li>2. The course is based on Architectural Acoustic theory and practice.</li> <li>3. It shall deal with the physics and perception of sound, the characteristics of sound and vibration in spaces, and their influence in the development of holistic design concepts.</li> </ol>	<p>CO1: To understand the different phenomenon and principles related to sound propagation.</p> <p>CO2: To understand the common acoustical defects in auditorium and the ways to rectify them.</p> <p>CO3: To understand different types of sound transmissions and measures to control them.</p> <p>CO4: To understand the importance of illumination in a building design and to apply the various techniques of natural and artificial lighting.</p> <p>CO5: To learn all the principles and energies behind illumination.</p>
475	7JAR4	Architectural Structure-VII	<ol style="list-style-type: none"> <li>1. Conceptual study of Advance Frame construction structures with reference to high rise buildings and surface structure.</li> <li>2. Study of different types of arches.</li> <li>3. Study of pre and post stressing methods.</li> </ol>	<p>CO1: To learn structural system and its use in buildings.</p> <p>CO2: Understanding of advance Frame structures applications in buildings.</p> <p>CO3: Learnt how to calculate the load for different type of structures for designing.</p> <p>CO4: Learn how to balance between design &amp; structure</p> <p>CO5: Able to balance between structural system with the design façade and planning</p>
476	7JAR5	Introduction to Settlement Planning	<ol style="list-style-type: none"> <li>1. To study design of settlements.</li> <li>2. To understand architecture as an integrated fabric of settlement.</li> <li>3. To develop an understanding of evolution of settlement planning, to study role and contribution of the planners towards contemporary town planning.</li> </ol>	<p>CO1: To define types of settlements based on different criteria.</p> <p>CO2: To identify the elements of settlement.</p> <p>CO3: To describe the principle of a settlement pattern.</p> <p>CO4: To classify the constituents of town and city.</p> <p>CO5: To develop an understanding of evolution of settlement planning, to study role and contribution of the planners towards contemporary town planning.</p>

## Course Outcomes

S. No.	Course Code	Course Title	Course Objective	Expected Outcome
477	7JAR6	Architectural Design-V & Field Trip	<ol style="list-style-type: none"> <li>1. Understanding building in urban context.</li> <li>2. To develop design skills and creative abilities to understand and explore complex architectural relationships integrating design elements to create meaningful built spaces.</li> <li>3. To develop the ability to generate design alternatives through site analysis and Site Planning</li> <li>4. To understand space organisation, analysis and evaluation of design criteria and concepts for specialized buildings.</li> <li>5. To integrate place making and symbolism to impart a sense of identity and image to architectural solutions</li> <li>6. Role of urban design and planning principles and other factors influencing campus layout and design.</li> </ol>	<p>CO1: Ability to Design, analyse and generate creative alternatives for moderately complex Architectural Design issues.</p> <p>CO2: Design a large campus for a specific purpose for a large population of multiple groups of users.</p> <p>CO3: Produce a design process and a design solution to an urban design problem.</p> <p>CO4: Learning the importance of the team work and enhancement of skills in expressing, demonstrations and presentation.</p> <p>CO5: Understanding the local building bylaws and follow up in the design.</p>
478	7JAR7	Advanced building Construction	<ol style="list-style-type: none"> <li>1. To enhance technical skills in the field of construction technology through an understanding of specialized applications and processes.</li> <li>2. Study of disaster resistant techniques.</li> <li>3. Study of construction and principles of geodesic domes.</li> </ol>	<p>CO1: Development of construction technology and innovative techniques as tools to address demand to mass construction.</p> <p>CO2: Knowledge of disaster resistant construction.</p> <p>CO3: Knowledge of long span steel structure techniques.</p> <p>CO4: Application of space frame &amp; domes</p> <p>CO5: use of Construction technology</p>
479	7JAR8	Introduction to Settlement Planning (Studio)	<ol style="list-style-type: none"> <li>1. To study design of settlements.</li> <li>2. To develop an understanding of evolution of settlement planning, to study role and contribution of the planners towards contemporary town planning.</li> <li>3. Understanding of Neighbours.</li> </ol>	<p>CO1: To Distinguish between different settlements, concepts of planning and techniques of survey.</p> <p>CO2: Review the condition of development of urbanization.</p> <p>CO3: To re-create a theme-based settlement pattern.</p> <p>CO4: To develop a local area plan.</p> <p>CO5: To understand the neighbouring settlement plans.</p>

## Course Outcomes

S. No.	Course Code	Course Title	Course Objective	Expected Outcome
480	7JAR9	Dissertation	<ol style="list-style-type: none"> <li>1. Acquire a strong theoretical foundation, clarity of thought and also to orient the students to structured research in a focused manner.</li> <li>2. Develop research capabilities and individual scholarly attitude.</li> <li>3. Develop analytical, synthesizing and interpretive skills and be able to present the same in standardized and systematic academic formats.</li> </ol>	<p>CO1: Systematically abstract, analyse, synthesize and interpret existing literature.</p> <p>CO2: Develops a specialized knowledge in a subject area which maybe an extension to the prescribed coursework.</p> <p>CO3: Builds his/her capacity to work independently and methodically in a variety of intellectually demanding contexts.</p> <p>CO4: Learn to explain various aspects</p> <p>CO5: Analyze the information with the help of literature and surveys</p>
481	7JAR10.1	Elective- Alternate Energy System in Architecture	<ol style="list-style-type: none"> <li>1. To understand other related dimensions of Architecture.</li> <li>2. To create awareness for the conservation of energy consumption and basic knowledge of creating environment friendly and energy-efficient architecture.</li> <li>3. To introduce the concept of energy efficiency and green building design.</li> <li>4. To introduce the Energy Conservation Building Code (Building Envelope) to the students.</li> </ol>	<p>CO1: Development of energy conscious architectural design, strategies and built forms.</p> <p>CO2: Futuristic vision of urban habitat.</p> <p>CO3: Understanding of the concept of green building design.</p> <p>CO4: Learn passive methods</p> <p>CO5: Use of resources</p>
482	7JAR10.2	Elective- Vernacular Architecture	<ol style="list-style-type: none"> <li>1. To introduce the study of vernacular architecture as a process and not a product.</li> <li>2. An exposure to the traditional architecture in various parts of the India with respect to the planning aspects, materials used in construction, constructional details and settlement planning.</li> <li>3. To understand vernacular architecture as diverse from other historical &amp; contemporary styles of architecture to understand that it is site responsive and an outcome of native techniques and various social, economic and mythical values of the society.</li> </ol>	<p>CO1: Development of significant contribution of vernacular architecture of place in fabric of that city or region.</p> <p>CO2: Understanding of Principles of design in Vernacular architecture</p> <p>CO3: Understanding of vernacular and tradition architecture.</p> <p>CO4: Uses of natural resources</p> <p>CO5: Application of local material with climate responsive</p>

## Course Outcomes

S. No.	Course Code	Course Title	Course Objective	Expected Outcome
483	7JAR11	Discipline & Extra Curricular Activities	<ol style="list-style-type: none"> <li>1. To develop understanding of community living and team work.</li> <li>2. To impart good habits and punctuality cleanliness.</li> <li>3. To develop the understanding of time management in the profession.</li> </ol>	<p>CO1 Develop his personality for farther team work.</p> <p>CO2 Perform well in the cooperate organizations.</p> <p>CO3 Time management which will make them a good professional.</p>
484	8JAR1	Practical Training	<ol style="list-style-type: none"> <li>1. The objective is to give a professional exposure to the students and an opportunity to learn in a professional environment.</li> <li>2. Introduced to fundamental processes of designing of real buildings on real sites.</li> <li>3. Develops confidence in interacting with various key players in building design and construction processes.</li> <li>4. Develop an understanding of contemporary issues and techniques of building construction.</li> </ol>	<p>CO1 The student gets a real-time exposure of how architectural projects are carried out.</p> <p>CO2 Office management and team-work to enhance the employability of the student.</p> <p>CO3 To acquaint students with their roles and responsibilities of dealing with various related agencies and the freedom/ limitations as a professional as well as their real status in the society.</p> <p>CO4 To be aware of or sensitive to the existence of certain ideas, material, or phenomena and being willing to tolerate them</p> <p>CO5 To understand and apply the professional aspects of an architecture office/company and the multiple issues in conception, preparation and execution of project on a site.</p> <p>CO6 To be able to set practises to act consistently in accordance with the values he or she has internalized.</p>
485	8JAR2	Discipline & Extra Curricular Activities	<ol style="list-style-type: none"> <li>1. To develop understanding of community living and team work.</li> <li>2. To impart good habits and punctuality cleanliness.</li> <li>3. To develop the understanding of time management in the profession.</li> </ol>	<p>CO1 Develop his personality for farther team work.</p> <p>CO2 Perform well in the cooperate organizations.</p> <p>CO3 Time management which will make them a good professional.</p>

## Course Outcomes

S. No.	Course Code	Course Title	Course Objective	Expected Outcome
486	9JAR1	Practical Training	<ol style="list-style-type: none"> <li>1. The objective is to give a professional exposure to the students and an opportunity to learn in a professional environment.</li> <li>2. Introduced to fundamental processes of designing of real buildings on real sites.</li> <li>3. Develops confidence in interacting with various key players in building design and construction processes.</li> <li>4. Develop an understanding of contemporary issues and techniques of building construction.</li> </ol>	<p>CO1 The student gets a real-time exposure of how architectural projects are carried out.</p> <p>CO2 Office management and team-work to enhance the employability of the student.</p> <p>CO3 To acquaint students with their roles and responsibilities of dealing with various related agencies and the freedom/ limitations as a professional as well as their real status in the society.</p> <p>CO4 To be aware of or sensitive to the existence of certain ideas, material, or phenomena and being willing to tolerate them</p> <p>CO5 To understand and apply the professional aspects of an architecture office/company and the multiple issues in conception, preparation and execution of project on a site.</p> <p>CO6 To be able to set practises to act consistently in accordance with the values he or she has internalized.</p>
487	9JAR2	Discipline & Extra Curricular Activities	<ol style="list-style-type: none"> <li>1. To develop understanding of community living and team work.</li> <li>2. To impart good habits and punctuality cleanliness.</li> <li>3. To develop the understanding of time management in the profession.</li> </ol>	<p>CO1 Develop his personality for farther team work.</p> <p>CO2 Perform well in the cooperate organizations.</p> <p>CO3 Time management which will make them a good professional.</p>

## Course Outcomes

S. No.	Course Code	Course Title	Course Objective	Expected Outcome
488	10JAR1	Professional Practice & Management	<ol style="list-style-type: none"> <li>1. The study of this subject is to acquaint the students, while giving basic information about various aspects of the profession, conduct and responsibilities and procedures of Architectural profession.</li> <li>2. The architectural profession and its regulatory and statutory bodies.</li> <li>3. Develop an understanding of legal liabilities and obligations as an architect and the importance of code of conduct and ethics in professional practice.</li> <li>4. To help students to develop essential skills to influence and motivate others</li> <li>5. To inculcate emotional and social intelligence and integrative thinking for effective leadership</li> <li>6. To create and maintain an effective and motivated team to work for the society</li> <li>7. To nurture a creative and entrepreneurial mindset</li> <li>8. To make students understand the personal values and apply ethical principles in professional and social contexts.</li> </ol>	<p>CO1 The study of this subject is to acquaint the students, while giving basic information about various aspects of the profession, conduct and responsibilities and procedures of Architectural profession.</p> <p>CO2 To learn about architectural profession and its regulatory and statutory bodies.</p> <p>CO3 To help students to develop essential skills to influence and motivate others</p> <p>CO4 To inculcate emotional and social intelligence and integrative thinking for effective leadership.</p> <p>CO5 To nurture a creative and entrepreneurial mindset and to make students understand the personal values and apply ethical principles in professional and social Context.</p>
489	10JAR2	Housing	<ol style="list-style-type: none"> <li>1. Understanding housing as a major element of architecture.</li> <li>2. To create awareness about the causes of housing problems and to Understand the various issues involved in urban housing and have a knowledge about the planning and design solutions for low income groups.</li> <li>3. To create awareness about importance of housing in Indian context and to impart knowledge for designing housing projects</li> <li>4. To sensitise students about various issues of housing pertaining to affordability, neighbourhood planning and design, etc.</li> </ol>	<p>CO1 To define basic elements of housing, neighbourhood, community, slums and real estate market.</p> <p>CO2 To outline various housing policies and programmes.</p> <p>CO3 To explain inter relationships between hierarchy of human needs and housing typologies.</p> <p>CO4 To Understand the various issues involved in urban housing and have a knowledge about the planning and design solutions for low income groups</p> <p>CO5 To create awareness about importance of housing in Indian context and to impart knowledge for designing housing projects</p>

## Course Outcomes

S. No.	Course Code	Course Title	Course Objective	Expected Outcome
490	10JAR3.1	Elective - Urban Conservation	<ol style="list-style-type: none"> <li>1. To understand the significance of built heritage as a resource</li> <li>2. To identify causes of deterioration and suggest remedial measures</li> <li>3. To develop an understanding in heritage, its value and the theory and practice of architectural conservation and history of conservation in India and West.</li> </ol>	<p>CO1 To understand the significance of built heritage as a resource</p> <p>CO2 To identify causes of deterioration of built heritage and find out the measures to restore them.</p> <p>CO3 To understand the difference and significance of tangible and intangible heritage.</p> <p>CO4 To learn about WHS. And understand the charters of Asian countries.</p> <p>CO5 To understand the charters of Asian countries.</p>
491	10JAR3.2	Elective - Urban Design	<ol style="list-style-type: none"> <li>1. To understand the scope and nature of urban design as a discipline.</li> <li>2. To introduce the components of a city and their interdependent roles, evolution of historic urban form and interpret the city in different ways and layers.</li> <li>3. To provide a structured understanding of the forces that shape and develop cities, as also to develop a common vocabulary and set of concepts with which to map, analyse, understand and explain the form, structure and development of the city.</li> </ol>	<p>CO1 To understand the general morphology of urban space.</p> <p>CO2 Be able to interpret the urban forms of the past and present.</p> <p>CO3 Demonstrate an understanding of the various bio-physical, historical, political-economic, and social-cultural layers of the city, and work with these to form a consciously designed intervention.</p> <p>CO4 Synthesise general theoretical models, analytical approaches to urban issues and contexts, technical knowledges, stakeholder interests and ethical frameworks, and individual vision into an integrated urban design proposition</p> <p>CO5 Articulate their stance and position as a designer within discourses of urbanism.</p> <p>CO6 Research and analyse information relevant to developing urban design interventions and propositions.</p> <p>CO7 Demonstrate high quality communication, representation and visual skills appropriate to urban design projects, including written, verbal, graphical and model-based presentation</p> <p>CO8 Demonstrate abilities in teamwork and time management for group and individual work.</p>

## Course Outcomes

S. No.	Course Code	Course Title	Course Objective	Expected Outcome
492	10JAR4.1	Elective - Disaster Resistant Structures	<ol style="list-style-type: none"> <li>1. To create awareness about natural disasters, reasons of their occurrence and have basic knowledge of disaster management, mitigation and techniques for post disaster monitoring and design.</li> <li>2. Awareness for Disaster Management issues in relevance of Architecture &amp; surrounding built environment.</li> </ol>	<p>CO1 To learn different types of disasters and understand the disaster profile of India.</p> <p>CO2 To create awareness about natural disasters and reasons of their occurrence.</p> <p>CO3 To learn the construction techniques for disaster resistant structures.</p> <p>CO4 To learn the methods of rebuilding the structures with less resources and disaster management.</p> <p>CO5 To have knowledge about different IS codes related to disaster resistant structures.</p>
493	10JAR4.2	Elective - Architectural Development and Legislation	<ol style="list-style-type: none"> <li>1. To understand need &amp; relevance of Building Legislations.</li> <li>2. To create awareness about basis and contents of Development Control Regulations.</li> <li>3. To understand the Project handover Process.</li> </ol>	<p>CO1 To understand need and relevance of building legislation.</p> <p>CO2 To develop an understanding of legal liabilities and obligations as an architect and the importance of code of conduct and ethics.</p> <p>CO3 To understand the different types of agreements related to construction and the Project handover Process.</p> <p>CO4 To learn about Arbitration, conciliation for the related benefits.</p> <p>CO5 To create awareness about basis and contents of Development Control Regulations.</p>
494	10JAR5	Advanced Study of Thesis Topic	<ol style="list-style-type: none"> <li>1. To study in detail subject area of the thesis topic.</li> <li>2. To identify and outline research threads that could be explored in the thesis.</li> <li>3. To select the most relevant research component.</li> </ol>	<p>CO1 Summarize relevant research areas to thesis project.</p> <p>CO2 Demonstrate comprehensively the link between the research and the thesis project.</p> <p>CO3 Demonstrating various secondary and primary case studies.</p> <p>CO4 Demonstrating various secondary and primary case studies.</p> <p>CO5 Resolve problems based on acquired knowledge</p> <p>CO6 Forms correlation of theories with real life issues</p>

## Course Outcomes

S. No.	Course Code	Course Title	Course Objective	Expected Outcome
495	10JAR6	Thesis Project	<ol style="list-style-type: none"> <li>1. To prepare a student to independently handle and present all aspects of an architectural design, from its evolution to final solution in totality.</li> <li>2. To understand the importance of the evolutionary stages of a design process and various techniques required for a successful presentation of an architectural design.</li> <li>3. To develop in students the ability to handle specific aspects / thrust area of design relevant to the topic.</li> </ol>	<p>CO1 To use all the skills acquired in the duration of preceding academic courses.</p> <p>CO2 Methodically self-direct effort by choosing the project of choice, builds capacity to work independently and methodically in a variety of intellectually and professionally demanding contexts.</p> <p>CO3 Learn to make an original and individual, creative contribution to the academic discipline and/or the professional field in some cases.</p> <p>CO4 Applies various codes, standards and regulations governing the project</p> <p>CO5 Demonstrate the ability for decision making required to progress the understanding already developed</p> <p>CO6 Demonstrate the ideas clearly using detailed physical Model</p>
496	10JAR7	Discipline & Extra Curricular Activities	<ol style="list-style-type: none"> <li>1. To develop understanding of community living and team work.</li> <li>2. To impart good habits and punctuality cleanliness.</li> <li>3. To develop the understanding of time management in the profession.</li> </ol>	<p>CO1 Develop his personality for farther team work.</p> <p>CO2 Perform well in the cooperate organizations.</p> <p>CO3 Time management which will make them a good professional.</p>
497	BCA 101	Computer Fundamentals	<ul style="list-style-type: none"> <li>• To know the importance of information systems for business and management.</li> <li>• To evaluate the role of the major types of information systems in a business environment and their relationship to each other.</li> <li>• To assess the impact of the Internet and Internet technology on business-electronic commerce and electronic business.</li> <li>• To identify the major management challenges to building and using information systems and learn how to find appropriate solutions to those challenges.</li> </ul>	<p>CO1: Identify computer hardware and peripheral devices</p> <p>CO2: Familiar with software applications</p> <p>CO3: Understand file management</p> <p>CO4: Accomplish creating basic documents, worksheets, presentations with their properties.</p> <p>CO5: Experience working with email and recognize email netiquette.</p>

## Course Outcomes

S. No.	Course Code	Course Title	Course Objective	Expected Outcome
498	BCA 102	C Language	<ul style="list-style-type: none"> <li>• To learn essential knowledge on the need of programming languages and problem solving techniques.</li> <li>• To explore major concepts of computer science and the process of computer programming, including programming, procedural and data abstraction and program modularity.</li> <li>• To learn effective usage of arrays, structures, functions, pointers and to implement thememory management concepts.</li> <li>• To analyze and find the solution of computer specific problems.</li> </ul>	CO1: Understand the basic terminology used in computer programming CO2: Use different data types in a computer program. CO3: Design programs involving decision structures, loops and functions. CO4: Explain the difference between call by value and call by reference. CO5: Understand the dynamics of memory by the use of pointers. CO6: Use different data structures and create/update basic data files
499	BCA 103	Mathematics	<ul style="list-style-type: none"> <li>• To perform the operations of addition, subtraction, multiplication, and division on whole numbers, fractions, and decimals, by hand.</li> <li>• To evaluate numerical expressions involving whole number exponents and square roots.</li> <li>• To identify basic geometrical figures and find their perimeter and area.</li> <li>• To solve problems involving ratios and proportions.</li> <li>• To solve problems involving percents.</li> <li>• To apply knowledge of basic arithmetic skills to problem solving.</li> <li>• To reason clearly and express them coherently in a mathematical context.</li> <li>• To transfer basic arithmetic skills to subsequent courses such as pre- and introductory algebra.</li> </ul>	CO1. Demonstrate competency in the areas that comprise the core of the mathematics major CO2. Demonstrate the ability to understand and write mathematical proofs CO3. Use appropriate technologies to solve mathematical problems CO4. Construct appropriate mathematical models to solve a variety of practical problems CO5. Obtain a full-time position in a related field or placement

## Course Outcomes

S. No.	Course Code	Course Title	Course Objective	Expected Outcome
500	BCA 104	Basics of Internet Programming	<ul style="list-style-type: none"> <li>• To gain the skills and project-based experience needed for entry into web design and development careers.</li> <li>• To use a variety of strategies and tools to create websites.</li> <li>• To develop awareness and appreciation of the myriad ways that people access the web and will be able to create standards-based websites that are accessible and usable by a full spectrum of users.</li> </ul>	CO1: Analyze a web page and identify its elements and attributes. CO2: Create web pages using HTML and Cascading Styles sheets. CO3: Build dynamic web pages using JavaScript (client side programming). CO4: Create XML documents used in Web Publishing. CO5: Create XML Schema for data transfer in distributed environment.
501	BCA 105	Communication Skills	<ul style="list-style-type: none"> <li>• To identify common communication problems that may be holding learners back</li> <li>• To identify what their non-verbal messages are communicating to others</li> <li>• To understand role of communication in teaching-learning process</li> <li>• To learn to communicate through the digital media</li> <li>• To understand the importance of empathetic listening</li> <li>• To explore communication beyond language.</li> </ul>	CO1: Understand Communication and Types of Communication. CO2: Know Grammar of Passive Voice, Reported Speech. CO3: Understand different ways of writing Job Application and Curriculum-Vitae. CO4: Describe different Short Stories for effective Learning. CO5: Describe different poems for improving communication skills.
502	BCA 106	Principles of Management	<ul style="list-style-type: none"> <li>• To gain an understanding of principles and functions of management.</li> <li>• To gain insights into history and development of management thought.</li> <li>• To analyze the managerial issues and problems arising in an organization</li> </ul>	CO1. Assume the roles and responsibilities associated with managerial functions. CO2. Identify the key contributors and their contributions in the development of management thought. CO3. Compare various approaches in management for problem solving.

## Course Outcomes

S. No.	Course Code	Course Title	Course Objective	Expected Outcome
503	BCA 107	Computer Fundamentals & PC Computing Lab	<ul style="list-style-type: none"> <li>• Introduce the fundamentals of computing devices and reinforce computer vocabulary, particularly with respect to personal use of computer hardware and software, the Internet, networking and mobile computing.</li> <li>• Provide hands-on use of Microsoft Office 2010 applications Word, Excel, Access and PowerPoint. Completion of the assignments will result in MS Office applications knowledge and skills</li> </ul>	CO1. Usage of computers and why computers are essential components in business and society. CO2. Utilize the Internet Web resources and evaluate on-line e-business system. CO3. Solve common business problems using appropriate Information Technology applications and systems. CO4. Identify categories of programs, system software and applications. Organize and work with files and folders. CO5. Describe various types of networks network standards and communication software.
504	BCA 108	C Language Lab	<ul style="list-style-type: none"> <li>• To provide a comprehensive study of the C programming language.</li> <li>• To identify problems that require programmed solution.</li> <li>• To study, analyze and implement pointers, memory allocation, data handling through files and graphics in 'C'.</li> </ul>	CO1. Write programs using advance concepts of C- language. CO2. Understand and apply the pointers, memory allocation techniques and use of files for dealing with variety of problems. CO3. Design graphics programs using C.
505	BCA 109	Internet Programming Lab	<ul style="list-style-type: none"> <li>• To study designing the web pages.</li> <li>• To study formatting and validating web pages.</li> <li>• To study designing web sites and deploying web sites on web servers.</li> </ul>	CO1. Design web pages. CO2. Format and validate web pages. CO3. Design web sites and deploy it on web servers.

## Course Outcomes

S. No.	Course Code	Course Title	Course Objective	Expected Outcome
506	BCA 201	Digital Electronics	<ul style="list-style-type: none"> <li>• To acquire the basic knowledge of digital logics and application of knowledge to understand digital electronics circuits.</li> <li>• Understand the various types of Digital Structures and designs for making a System.</li> <li>• Apply modern computational, analytical, tools and techniques to face the challenges in real environment.</li> </ul>	<p>CO:1. Convert different type of codes and number systems which are used in digital transmission and computer systems.</p> <p>CO:2. Apply the codes and number systems converting circuits and Compare different types of logic families which are the basic unit of different types of logic gates in the domain of economy, performance and efficiency.</p> <p>CO:3. Analyze different types of digital electronic circuit using various mapping and logical tools and know the techniques to prepare the most simplified circuit using various mapping and mathematical methods.</p> <p>CO:4. Design different types of with and without memory element digital electronic circuits for particular operation, within the real time of economic, performance, efficiency, user friendly and environmental constraints.</p> <p>CO:5. Assess the nomenclature and technology in the area of various memory devices used and apply the memory devices in different types of digital circuits for real world application.</p>
507	BCA 202	Computer Organization and Architecture	<ul style="list-style-type: none"> <li>• Have a thorough understanding of the basic structure and operation of a digital computer.</li> <li>• Discuss in detail the operation of the arithmetic unit including the algorithms &amp; implementation of fixed-point and floating-point addition, subtraction, multiplication &amp; division.</li> <li>• Study the different ways of communicating with I/O devices and standard I/O interfaces.</li> </ul>	<p>CO1: Understand the major components of a computer including CPU, memory, I/O and storage.</p> <p>CO2: Students will understand the uses for cache memory.</p> <p>CO3: Understand a wide variety of memory technologies both internal and external.</p> <p>CO4: Understand the role of the operating system in interfacing with the computer hardware.</p> <p>CO5: Understand the basic components of the CPU including the ALU and control unit.</p>

## Course Outcomes

S. No.	Course Code	Course Title	Course Objective	Expected Outcome
508	BCA 203	System Analysis & Design	<ul style="list-style-type: none"> <li>• Introduce variety of new software used by analysts, designers to manage projects.</li> <li>• Analyze and document systems, design new systems and implement their plans.</li> <li>• Have the coverage of UML, wireless technologies and ERP; web based systems for e-commerce and expanded coverage on RAD and GUI design.</li> </ul>	CO1: Understand the major components of a computer including CPU, memory, I/O and storage. CO2: Understand the uses for cache memory. CO3: Understand a wide variety of memory technologies both internal and external. CO4: Understand the role of the operating system in interfacing with the computer hardware. CO5: Understand the basic components of the CPU including the ALU and control unit.
509	BCA 204	Data Structure & Algorithms	<ul style="list-style-type: none"> <li>• Learn efficient storage mechanisms of data for an easy access, design and implementation of various basic and advanced data structures, introduce various techniques for representation of the data in the real world.</li> <li>• Develop application using data structures, learn the concept of protection and management of data and improve the logical ability.</li> <li>• Choose appropriate data structure as applied to specified problem definition, handle operations like searching, insertion, deletion, traversing mechanism etc. on various data structures.</li> </ul>	CO1: Walk through insert and delete for different data structures. CO2: Calculate and measure efficiency of code CO3: Appreciate some interesting algorithms like Huffman, Quick Sort, and Shortest Path etc. CO4: Walkthrough algorithm. CO5: Improve programming skills.
510	BCA 205	Linux Environment	<ul style="list-style-type: none"> <li>• This comprehensive course is designed to provide the knowledge and skills to students so that they can work in Linux environments.</li> <li>• The course covers areas of Linux Architecture, file system and graphical environment, Linux commands, file permissions, process Management and shell meta characters, working of vi editors, different scripts.</li> </ul>	CO1: Describe and use the LINUX operating system. CO2: Describe and use the fundamental LINUX system tools and utilities. CO3: Describe and write shell scripts in order to perform basic shell programming. CO4: Describe and understand the LINUX file system.

## Course Outcomes

S. No.	Course Code	Course Title	Course Objective	Expected Outcome
511	BCA 206	Environmental Studies	<ul style="list-style-type: none"> <li>The Environmental Studies major prepares students for careers as leaders in understanding and addressing complex environmental issues from a problem-oriented, interdisciplinary perspective and Apply systems concepts and methodologies to analyze and understand interactions between social and environmental processes.</li> </ul>	<p>CO1: Appreciate concepts and methods from ecological and physical sciences and their application in environmental problem solving. Ecosystem Links between environmental components and their role.</p> <p>CO2: Basic Structure of atmosphere and their functions Current problems related issues Students will apply knowledge of the sciences within an interdisciplinary context in solving environmental issues such as environmental health, food and agriculture, energy, waste and pollution, climate change, management, and loss of biodiversity.</p> <p>CO3: Basic knowledge about water resources, current problems related issues, water born diseases, technologies of water treatment.</p> <p>CO4: Level of sound and their units, sources and effects of noise pollution, control measures.</p> <p>CO5: Concept of non Conventional energy resources, types and various applications of renewable resources and current potentials of energy resources.</p>
512	BCA 207	Data Structure & Algorithms Lab	<ul style="list-style-type: none"> <li>The course is designed to develop skills to design and analyze simple linear and non linear data structures.</li> <li>It strengthens the ability to the students to identify and apply the suitable data structure for the given real world problem.</li> <li>It enables them to gain knowledge in practical applications of data structures.</li> </ul>	<p>CO1: Design and analyze the time and space efficiency of the data structure</p> <p>CO2: Be capable to identify the appropriate data structure for given problem</p> <p>CO3: Have practical knowledge on the applications of data structures</p>
513	BCA 208	Linux Environment Lab	<ul style="list-style-type: none"> <li>To understand the basic concepts, design and structure of the Linux operating system.</li> <li>To implement various system calls.</li> <li>To acquire skills in Linux Shell programming.</li> <li>To learn basics of Linux system administration.</li> </ul>	<p>CO1. Learn UNIX structure, commands, and utilities.</p> <p>CO2. Describe and understand the UNIX file system.</p> <p>CO3. Write shell scripts in order to perform shell programming.</p> <p>CO4. Acquire knowledge about text processing utilities, process management and system operation of UNIX.</p>

## Course Outcomes

S. No.	Course Code	Course Title	Course Objective	Expected Outcome
514	BCA 209	Personality Development Lab	<ul style="list-style-type: none"> <li>• To listen to different texts and comprehend them.</li> <li>• To train students to use appropriate language for public speaking.</li> <li>• To encourage students to make writing habit.</li> <li>• To make the students understand the importance of working in teams in the present day scenario.</li> <li>• To make students understand how setting goals in life is important.</li> <li>• To make students realize how group decision making is better than decisions made individually.</li> <li>• To help students better understand basic leadership qualities and personality traits.</li> <li>• To stress upon students, the importance of time management.</li> <li>• To facilitate critical thinking and analysis of activities and attitudes that support company's success.</li> </ul>	CO1. Comprehend conversations and speeches. CO2. Speak with clarity and confidence, thereby enhancing their employability skills. CO3. Identify his/her creative self, and express effectively the same in writing. CO4. Explain the advantages of teamwork and how the tasks could be completed effectively when done as a cohesive unit. CO5. Realize that selecting goal is a fundamental component to long-term success of an individual. CO6. Enable students to understand different aspects of leadership and evaluate in their own strengths. CO7. Be more organized and disciplined.
515	BCA 301	Object Oriented Programming Using C++	<ul style="list-style-type: none"> <li>• Learn to design software using abstract data and control structures.</li> <li>• Learn structures including lists, stacks, queues, trees, and graphs.</li> <li>• Choose appropriate data structures and algorithms for problem solving.</li> </ul>	CO1: Understand object-oriented programming features in C++. CO2: Apply these features to program design and implementation. CO3: Understand object-oriented concepts and how they are supported by C++. CO4: Gain some practical experience of C++. CO5: Apply the facilities offered by C++ for Object-Oriented Programming.

## Course Outcomes

S. No.	Course Code	Course Title	Course Objective	Expected Outcome
516	BCA 302	Database Management System	<ul style="list-style-type: none"> <li>• Understand the role of database management system in an organization, basic database concepts, including the structure and operation of the relational data model.</li> <li>• Construct simple and moderately advanced database queries using, Structured Query Language (SQL).</li> <li>• Understand and successfully apply logical database design principles, including E-R diagrams and database normalization.</li> </ul>	CO1: Understand, appreciate and effectively explain the underlying concepts of database Technologies. CO2: Design and implement a database schema for a given problem-domain CO3: Normalize a database and Populate and query a database using SQL DML/DDL commands. CO4: Declare and enforce integrity constraints on a database CO5: Concept of transaction and concurrency.
517	BCA 303	Front End Design Tool (VB)	<ul style="list-style-type: none"> <li>• This course introduces computer programming using the Visual BASIC programming language with object-oriented programming principles.</li> <li>• Emphasis is on event-driven programming methods, including creating and manipulating objects, classes, and using object-oriented tools such as the class debugger.</li> <li>• Should be able to design, code, test and debug at a beginning level.</li> </ul>	CO1: Design, create, build, and debug Visual Basic applications. CO2: Explore Visual Basic's Integrated Development Environment (IDE). CO3: Implement syntax rules in Visual Basic programs also Explain variables and data types used in program development. CO4: Apply arithmetic operations for displaying numeric output. CO5: Write and apply decision structures for determining different operations, loop structures to perform repetitive tasks. CO6: Write and apply procedures, sub-procedures, and functions to create manageable code.

## Course Outcomes

S. No.	Course Code	Course Title	Course Objective	Expected Outcome
518	BCA 304	Managerial Personality Development	<ul style="list-style-type: none"> <li>• Projecting the Right First Impression.</li> <li>• Polishing manners to behave appropriately in social and professional circles.</li> <li>• Enhancing the ability to handle casual and formal situations in terms of personal grooming, dining and entertaining etiquette.</li> <li>• Developing and maintaining a positive attitude and being assertive.</li> <li>• Mastering Cross Cultural Etiquette.</li> <li>• Handling difficult situations with grace, style, and professionalism.</li> <li>• Grooming for Success.</li> <li>• Body Language, Poise, and Eye Contact.</li> <li>• Pronunciation, Voice Modulation, and Diction.</li> <li>• Self-Esteem and Confidence.</li> </ul>	<p>CO: 1. Develop and maintain a Reflection.</p> <p>CO: 2. Develop and articulate a personal philosophy of meeting &amp; greeting.</p> <p>CO: 3. Grasp the exact mean of management in so many ways like time, wardrobe &amp; stress.</p> <p>CO: 4. Learn about- how to represent, effective skills &amp; body language.</p> <p>CO: 5. Grasp the practical knowledge in the form of GD and interview.</p>

## Course Outcomes

S. No.	Course Code	Course Title	Course Objective	Expected Outcome
519	BCA 305	Technical Communication	<ul style="list-style-type: none"> <li>• Understanding the characteristics of technical writing and the importance of purpose, audience, and genre for written communication in technical fields.</li> <li>• Articulating complex engineering ideas appropriate for targeted audiences.</li> <li>• Planning, drafting, revising, editing, and critiquing technical and professional documents through individual and collaborative writing.</li> <li>• Writing effective technical and business documents that are grammatically and stylistically correct.</li> <li>• Preparing and delivering professional technical presentations through applying principles of effective oral communication and slide design.</li> <li>• Applying principles for the visual display of quantitative information.</li> <li>• Researching, analyzing, synthesizing, and applying information to create technical reports.</li> <li>• Recognizing ethical implications of technical communication in professional contexts.</li> <li>• Understanding the contemporary issues in engineering from an environmental, societal, economic, and global perspective.</li> </ul>	<p>CO:1. Describe that you can effectively communicate technical material in print.</p> <p>CO:2. Demonstrate that you can present technical material orally with confidence and poise.</p> <p>CO:3. Understand that you can present technical material using audiovisual materials.</p> <p>CO:4. Demonstrate that you can communicate technical material to a variety of audiences, from members of the building and engineering trades and medical fields to government representatives and the general public.</p> <p>CO:5. Explain that you can work well in teams</p>

## Course Outcomes

S. No.	Course Code	Course Title	Course Objective	Expected Outcome
520	BCA 306	Discrete Mathematics	<ul style="list-style-type: none"> <li>To develop logical thinking and its application to computer science (to emphasize the importance of proving statements correctly and de-emphasize the hand-waving approach towards correctness of an argument). The subject enhances one's ability to reason and ability to present a coherent and mathematically accurate argument. About 40% of the course time will be spent on logic and proofs and remaining 60% of the course time will be devoted to functions, relations, etc.</li> </ul>	CO1. Reason at multiple levels of detail and abstraction, being aware, in particular, of the applicability and limitations of tools from mathematics and theoretical computer science. CO2. Recognize the context in which a computer system may function, including its interactions with people and the physical world and able to communicate with, and learn from, experts from different domains throughout their careers CO3. Possess a solid foundation that allows and encourages them to maintain relevant skills as the field evolves CO4. Manage their own learning and development, including managing time, priorities, and progress CO5. Encompass an appreciation of the interplay between theory and practice.
521	BCA 307	OOPS Using C++ Lab	<ul style="list-style-type: none"> <li>To know different programming paradigms.</li> <li>To study and understand the object oriented programming concepts and methodology.</li> <li>To implement object oriented programming concepts in C++.</li> </ul>	CO1. Understand key features of the object oriented programming language such as encapsulation (abstraction), inheritance, and polymorphism. CO2. Design and implement object oriented applications. CO3. Analyze problems and implement simple C++ applications using an object oriented software engineering approach.
522	BCA 308	DBMS Lab	<ul style="list-style-type: none"> <li>To understand the different issues involved in the design and implementation of a database system.</li> <li>To study the physical and logical database designs, database modeling, and relational models.</li> <li>To understand and use SQL to query, update, and manage a database.</li> <li>To develop an understanding of essential DBMS concepts such as: transaction processing, integrity, concurrency, and recovery in databases.</li> <li>To design and build a simple database system and demonstrate competence with the fundamental tasks involved with modeling, designing, and implementing a DBMS.</li> </ul>	CO1. Demonstrate an understanding of the relational data model. CO2. Transform an information model into a relational database schema and to use a data definition language and/or utilities to implement the schema using a DBMS. CO3. Formulate, using relational algebra, solutions to a broad range of query problems. CO4. Formulate, using SQL, solutions to a broad range of query and data update problems.

## Course Outcomes

S. No.	Course Code	Course Title	Course Objective	Expected Outcome
523	BCA 309	Front End Design Tool (VB) Lab	<ul style="list-style-type: none"> <li>This course introduces computer programming using the Visual BASIC programming language with object-oriented programming principles.</li> <li>The objective of this course is to make the student to learn how to design, code, test and debug programs using VC++ and VB.</li> </ul>	CO1:Design, create, build, and debug Visual Basic applications. CO2:Apply arithmetic operations for displaying numeric output. CO3:Apply decision structures for determining different operations. CO4:Write and apply procedures, sub-procedures, and functions to create manageable code. CO5:Create one and two dimensional arrays for sorting, calculating, and displaying of data. CO6:Write Windows applications using forms, controls, and events.
524	BCA 401	Operating Systems	<ul style="list-style-type: none"> <li>Understand the services provided by and the design of an operating system.</li> <li>Understand the structure and organization of the file system, understand what a process is and how processes are synchronized and scheduled.</li> <li>Understand different approaches to memory management. Students should be able to use system calls for managing processes, memory and the file system. Students should understand the data structures and algorithms used to implement an OS.</li> </ul>	CO1: Understand the basic working process of an operating system. CO2: Describe the importance of process and scheduling. CO3: Understand the deadlock detection and recovery techniques. CO4: Understand the issues in synchronization and memory management. CO5: Understand the File system and Distributed Operating System.
525	BCA 402	Computer Oriented Numerical & Statistical Methods Using C	<ul style="list-style-type: none"> <li>To demonstrate understanding of numerical and statistical methods in support of the analysis, design and application for problem solving in the field of information technology.</li> </ul>	CO1. Apply numerical methods to find our solution of algebraic equations using different methods under different conditions, and numerical solution of system of algebraic equations. CO2. Apply various interpolation methods and finite difference concepts. CO3. Work out numerical differentiation and integration whenever and wherever routine methods are not applicable. CO4. Work numerically on the ordinary differential equations using different methods through the theory of finite differences. CO5. Work numerically on the partial differential equations using different methods through the theory of finite differences.

## Course Outcomes

S. No.	Course Code	Course Title	Course Objective	Expected Outcome
526	BCA 403	Java Programming	<ul style="list-style-type: none"> <li>• Be familiarizing with good design and programming.</li> <li>• Create Java programs that leverage the object-oriented features of the Java language, such as encapsulation, inheritance and polymorphism; use data types, arrays and other data collections.</li> <li>• Implement error-handling techniques using exception handling.</li> </ul>	<p>CO1: The students will have the competence in the use of Java Programming language.</p> <p>CO2: The development of small to medium sized application programs that demonstrate professionally acceptable coding.</p> <p>CO3: The students will have the competence in the use of Java Programming language.</p> <p>CO4: An understanding of the principles and practice of object oriented programming in the construction of robust maintainable programs which satisfy the requirements.</p> <p>CO5: Design and implement an application that demonstrates their competency with Java syntax, structure and programming logic, incorporating basic features of the language as well as some features from the I/O (Input/Output) or GUI libraries.</p>
527	BCA 404	Software Engineering	<ul style="list-style-type: none"> <li>• Introduce software engineering and to explain its importance in building large programs.</li> <li>• Understand the process of developing new technology and the role of experimentation set out the answers to key questions about software engineering.</li> <li>• Introduce ethical and professional issues and to explain why they are of concern to software engineers</li> </ul>	<p>CO1: Understand the importance of the stages in the software life cycle.</p> <p>CO2: Understand the various process models.</p> <p>CO3: Understand the importance and organization of SRS.</p> <p>CO4: Design software by applying the software engineering principles.</p>
528	BCA 405	Data Mining & Data Warehousing	<ul style="list-style-type: none"> <li>• Data warehouse is used to manage the old data and mining is used for finding the appropriate information for decision making.</li> <li>• The course provides knowledge of Data warehousing and Data mining.</li> </ul>	<p>CO1: Understand the Data Mining and its architecture.</p> <p>CO2: Describe the Data Mining Techniques.</p> <p>CO3: Understand the Framework and architecture of Data Warehouse.</p> <p>CO4: Understand the different Components of Data Warehouse.</p> <p>CO5: Perform On-Line Analytical Processing.</p>

## Course Outcomes

S. No.	Course Code	Course Title	Course Objective	Expected Outcome
529	BCA 406	Communication Skills- Scientific & Technical Writing	<ul style="list-style-type: none"> <li>• Students will learn to recognize and respond appropriately to specific communication tasks in different contexts;</li> <li>• Students will learn how to search for, assemble, record, analyze, evaluate/validate, and present information needed to accomplish a given task.</li> <li>• Students will learn to revise and edit documents to meet the standards expected of professionals in the field.</li> <li>• Students' participation in course based projects that help solve community problems reconnects students' academic lives with their communities.</li> <li>• Communication tasks which students perform as a team occur in a real world context of a term long client based open ended investigative project.</li> <li>• To increase participant awareness and application of tools and exercises available to them to better present their research and knowledge in written form.</li> </ul>	<p>CO1. Understand how to apply technical information and knowledge in practical documents for a variety of a.) Professional audiences (including peers and colleagues or management) and b) public audiences.</p> <p>CO2. Recognize, explain, and use the rhetorical strategies and the formal elements of these specific genres of technical communication: technical abstracts, data based research reports, instructional manuals, technical descriptions, web pages, wikis, and correspondence.</p> <p>CO3. Participate actively in writing activities (individually and in collaboration) that model effective scientific and technical communication in the workplace.</p> <p>CO4. Recognize, explain, and use the rhetorical strategies and the formal elements of these specific genres of technical communication: technical abstracts, data based research reports, instructional manuals, technical descriptions, web pages, wikis, and correspondence. Revise and edit effectively in all assignments, including informal media (such as email to the instructor).</p> <p>CO5. Collect, analyze, document, and report research clearly, concisely, logically, and ethically; understand the standards for</p>
530	BCA 407	Java Lab	<ul style="list-style-type: none"> <li>• To understand object oriented features of java and implementing it in java programming.</li> <li>• To learn and understand inheritance, interfaces, multithreading and exception handling.</li> <li>• To understand different input/output objects (input vs. output, character vs. byte, data vs. processing, object) and methods and the structure of the java.io package.</li> <li>• To learn and understand the use of applets and file handling.</li> </ul>	<p>CO1. Explain The model of object oriented programming and fundamental features of an object oriented language.</p> <p>CO2. How to test, document and prepare a professional looking package for each business project.</p> <p>CO3. Ability to write a computer program to solve specified problems and to use the Java SDK environment to create, debug and run simple Java programs.</p> <p>CO4. Explain and develop programs for inheritance, multithreading, applets, exception handling and file handling.</p>

## Course Outcomes

S. No.	Course Code	Course Title	Course Objective	Expected Outcome
531	BCA 408	Software Engineering Lab	<ul style="list-style-type: none"> <li>• To understand various concepts of Unified Modeling Language.</li> <li>• To learn and implement UML views, static views, design views etc.</li> <li>• To understand deployment view, model management views.</li> </ul>	CO1. To Create models for software applications. CO2. How to Use the different UML notations for designing software. CO3. The ability to write a computer program to solve specified problems
532	BCA 409	Communication Technical Lab	<ul style="list-style-type: none"> <li>• To develop soft skill.</li> <li>• To study and understand current trends in Information Technology and prepare presentation material.</li> <li>• To improve oral communication skills through presentation.</li> <li>• To prepare original technical write up on the presentation.</li> </ul>	CO1. Improvement in proficiency in English CO2. Improvement in presentation skill CO3. Improvement in analytical and reasoning ability CO4. Improvement in technical writing
533	BCA 501	Computer Networks	<ul style="list-style-type: none"> <li>• Explain the importance of data communications and the Internet in supporting business communications and daily activities; explain how communication works in data networks and the Internet.</li> <li>• Recognize the different internetworking devices and their functions.</li> <li>• Explain the role of protocols in networking and analyze the services and features of the various layers of data networks.</li> </ul>	CO1: Explain the importance of data communications and the Internet in supporting business communications and daily activities. CO2: Explain how communication works in data networks and the Internet. CO3: Recognize the different internetworking devices and their functions. CO4: Explain the role of protocols in networking.
534	BCA 502	System Software	<ul style="list-style-type: none"> <li>• To introduce student the fundamental model of the processing of high level language programs for execution on computer system.</li> <li>• To explain the basic operations that are performed from the time a computer is turned on until a user is able to execute programs.</li> <li>• To understand and implement the structure and design of Assembler, Loader, Linkers, Macros &amp; Compilers.</li> </ul>	CO1: Understand SIC architecture, features of utility software's such as assemblers, loaders, linkers, editors and macro processor. CO2: Design simple assembler for Simple instruction computer. CO3: Design linker and loaders for simple instruction computer. CO4: Design elementary macro processor for simple assembly level language. CO5: Design and implement simple lexer and parser using lex and yacc tools.

## Course Outcomes

S. No.	Course Code	Course Title	Course Objective	Expected Outcome
535	BCA 503	Advanced Internet Programming	<ul style="list-style-type: none"> <li>• To study and designing the web pages in ASP.</li> <li>• To study formatting and validating web pages in ASP.</li> <li>• To Learn Web Service Essentials.</li> <li>• To gain knowledge of Rich Internet Application Technologies.</li> <li>• To study and designing web sites and deploying web sites on web servers.</li> </ul>	CO1:Analyze a web page and identify its elements and attributes. CO1: Design, Format and validate web pages in ASP. CO2: Build dynamic web pages using ASP. CO3: Create Database using ADO. CO4: Create XML documents used in Web Publishing. CO5: Design web sites and deploy it on web servers.
536	BCA 504	Advance Java	<ul style="list-style-type: none"> <li>• Objective of this course is to provide the ability to design console based, GUI based and web based applications.</li> <li>• Students will also be able to understand integrated development environment to create, debug and run multi-tier and enterprise-level applications</li> </ul>	CO1:Develop Swing-based GUI. CO2: Develop client/server applications and TCP/IP socket programming CO3: Update and retrieve the data from the databases using SQL CO4: Develop component-based Java software using JavaBeans. CO5: Develop server side programs in the form of servlets.
537	BCA 505	Computer Graphics	<ul style="list-style-type: none"> <li>• Understand contemporary graphics principles and graphics hardware.</li> <li>• Have a comprehensive introduction to computer graphics leading to the ability to understand contemporary terminology, progress, issues, and trends.</li> <li>• Have thorough introduction to computer graphics techniques, focusing on 3D modeling, image synthesis, and rendering.</li> </ul>	CO1: Demonstrate an understanding of contemporary graphics hardware. CO2: Create interactive graphics applications in C++ using one or more graphics. CO3: Create interactive graphics applications in C++ using one or more graphicsapplication programming interfaces. CO4: Write program functions to implement graphics primitives. CO5: Write programs that demonstrate geometrical transformations.

## Course Outcomes

S. No.	Course Code	Course Title	Course Objective	Expected Outcome
538	BCA 506	E-Commerce	<ul style="list-style-type: none"> <li>• Define e-commerce and compare and contrast it from e-business.</li> <li>• Identify some business applications of e-commerce, identify, define and differentiate the various forms of e-commerce.</li> <li>• Recognize the business impact and potential of e-Commerce.</li> </ul>	<p>CO1: Have knowledge of e-commerce, its components, structure of e-banking, rules and regulations on e-commerce.</p> <p>CO2: Acquire a good knowledge of e-commerce, both the technical and business aspects;</p> <p>CO3: Understand the principles and practices of e-commerce and its related technologies;</p> <p>CO4: Discuss the trends in e-Commerce and the use of the Internet.</p> <p>CO5: Explain the economic consequences of e-Commerce.</p>
539	BCA 507	Advance Internet Programming Lab	<ul style="list-style-type: none"> <li>• To design and deploy web application using servlets.</li> <li>• To design and deploy web application using JSPs.</li> <li>• To design and deploy web application using Ajax.</li> </ul>	<p>CO1. Design and deploy web application using servlets.</p> <p>CO2. Design and deploy web application using JSPs.</p> <p>CO3. Design and deploy web application using Ajax.</p>
540	BCA 508	Advanced Java Lab	<ul style="list-style-type: none"> <li>• Using Graphics, Animations and Multithreading for designing Simulation and Game based applications.</li> <li>• Design and develop GUI applications using Abstract Windowing Toolkit (AWT), Swing and Event Handling.</li> <li>• Design and develop Web applications</li> <li>• Designing Enterprise based applications by encapsulating an application's business logic.</li> <li>• Designing applications using pre-built frameworks.</li> </ul>	<p>CO1. Learn the Internet Programming, using Java Applets</p> <p>CO2. Create a full set of UI widgets and other components, including windows, menus, buttons, checkboxes, text fields, scrollbars and scrolling lists, using Abstract Windowing Toolkit (AWT) &amp; Swings</p> <p>CO3. Apply event handling on AWT and Swing components.</p> <p>CO4. Learn to access database through Java programs, using Java Data Base Connectivity (JDBC).</p> <p>CO5. Create dynamic web pages, using Servlets and JSP.</p> <p>CO6. Make a reusable software component, using Java Bean.</p> <p>CO7. Invoke the remote methods in an application using Remote Method Invocation (RMI)</p> <p>CO8. Understand the multi-tier architecture of web-based enterprise applications using Enterprise JavaBeans (EJB).</p>

## Course Outcomes

S. No.	Course Code	Course Title	Course Objective	Expected Outcome
541	BCA 509	Summer Project Seminar	<ul style="list-style-type: none"> <li>• To create a communication style for individual &amp; team building.</li> <li>• To Use values in improving one's own professionalism.</li> <li>• To develop the higher cognitive abilities that is analysis, synthesis and evaluation.</li> <li>• To Ability to identify, formulate and present model problems.</li> </ul>	<p>CO1: Personalize and create a communication style for individual &amp; team building.</p> <p>CO2: Use values in improving one's own professionalism</p> <p>CO3: Develop the higher cognitive abilities that are analysis, synthesis and evaluation.</p> <p>CO4: Ability to identify, formulate and present model problems.</p>
542	BCA 601	Advance Computer Networks	<ul style="list-style-type: none"> <li>• The course isaimed at providing basic understanding of Computer networks starting with OSI Reference Model, Protocols at different layers with special emphasis on IP, TCP &amp; UDP and Routing algorithms.</li> <li>• Some of the major topics which areincludedin this course areCSMA/CD, TCP/IP implementation, LANs/WANs, internetworking technologies, Routing and Addressing.</li> <li>• Provide the mathematical background of routing protocols.</li> <li>• Aim of this course is to develop some familiarity with current research problems and research methods in advance computer networks</li> </ul>	<p>CO1: Illustrate reference models with layers, protocols and interfaces.&amp;Summarizefunctionalities of different Layers.</p> <p>CO2: Combine and distinguishfunctionalities of different Layers</p> <p>CO3: DescribeandAnalysisofbasic protocols of computer networks, and how they can be used to assist in network design and implementation</p> <p>CO4: Identify and describedevelopment history of routing protocols</p> <p>CO5: Describe Sub-netting and Addressing of IP V4.LT</p>

## Course Outcomes

S. No.	Course Code	Course Title	Course Objective	Expected Outcome
543	BCA 602	Management Information System	<ul style="list-style-type: none"> <li>• Get the knowledge about the important management concepts &amp; their application, to have an insight of various functional departments in an organization.</li> <li>• Discuss the importance of security, privacy, and ethical issues as they relate to information systems.</li> <li>• Identify some of the strategies employed to lower costs and improve service.</li> </ul>	<p>CO1: Understand the usage of MIS in organizations and the constituents of the MIS.</p> <p>CO2: Understand the classifications of MIS, understanding of functional MIS and the different functionalities of these MIS. This would be followed by case study on Knowledge management.</p> <p>CO3: This module leads to linking MIS to business strategy and the areas in which MIS would lead to strategic advantage. This would be followed by case study and guest lecture.</p> <p>CO4: Learns the functions and issues at each stage of system development. Further different ways in which systems can be developed are also learnt.</p> <p>CO5: Provides understanding about emerging MIS technologies like ERP, CRM, SCM and trends in enterprise applications.</p>
544	BCA 603	Artificial Intelligence	<ul style="list-style-type: none"> <li>• To create appreciation and understanding of both the achievements of AI and the theory underlying those achievements.</li> <li>• To introduce the concepts of a Rational Intelligent Agent and the different types of Agents that can be designed to solve problems.</li> <li>• To impart basic proficiency in representing difficult real life problems in a state space representation so as to solve them using AI techniques like searching and game playing.</li> <li>• To create an understanding of the basic issues of knowledge representation and Logic and blind and heuristic search, as well as an understanding of other topics such as minimal, resolution, etc. That plays an important role in AI programs.</li> <li>• To introduce advanced topics of AI such as planning, Bayes networks, natural language processing and Cognitive Computing.</li> </ul>	<p>CO1: Demonstrate knowledge of the building blocks of AI as presented in terms of intelligent agents.</p> <p>CO2: Analyze and formalize the problem as a state space, graph, design heuristics and select amongst different search or game based techniques to solve them.</p> <p>CO3: Develop intelligent algorithms for constraint satisfaction problems and also design intelligent systems for Game Playing</p> <p>CO4: Attain the capability to represent various real life problem domains using logic based techniques and use this to perform inference or planning.</p> <p>CO5: Formulate and solve problems with uncertain information using Bayesian approaches.</p>

## Course Outcomes

S. No.	Course Code	Course Title	Course Objective	Expected Outcome
545	BCA 604A	.NET Programming	<ul style="list-style-type: none"> <li>• Get the Knowledge about different Object Oriented Features and to understand disconnected architecture of .Net.</li> <li>• To acquire knowledge on the usage of recent platforms in developing web applications.</li> <li>• Learn Visual Basic .NET to create graphical user interface applications.</li> </ul>	<p>CO1: Contrast and compare major elements of the .NET Framework and explain how C# fits into the .NET platform.</p> <p>CO2: Analyze the basic structure of a C# application and be able to document, debug, compile, and run a simple application.</p> <p>CO3: Create methods (functions and subroutines) that can return values and take parameters.</p> <p>CO4: Demonstrate use of common objects and reference types.</p> <p>CO5: Demonstrate ability to create a C# Windows and web application using Visual Studio.</p>
546	BCA 604B	Fundamental of PHP	<ul style="list-style-type: none"> <li>• Understand the basics of the PHP.</li> <li>• Examine how web pages are developed using PHP.</li> <li>• Learn certain specific PHP variables and syntax.</li> </ul>	<p>CO1: Understand process of executing a PHP-based script on a webserver.</p> <p>CO2: Develop a form containing several fields and be able to process the data provided on the form by a user in a PHP-based script.</p> <p>CO3: Understand basic PHP syntax for variable use, and standard language constructs, such as conditionals and loops.</p> <p>CO4: Understand the syntax and use of PHP object-oriented classes.</p> <p>CO5: Understand the syntax and functions available to deal with file processing for files on the server as well as processing web URLs.</p>
547	BCA 604C	Principles of Accounting	<ul style="list-style-type: none"> <li>• To understand the concept and role of accounting in financial reporting in modern economy</li> <li>• To develop the understanding of basic accounting concepts and techniques of an accounting system. Principles and procedures underlying the accounting process</li> <li>• To provide an understanding, importance of accounting; preparation of final accounts for profit making organization</li> <li>• To identify errors in the preparation of accounts.</li> <li>• To use various software in preparation of Accounts.</li> </ul>	<p>CO1. Demonstrate the role of accounting in business in economic world.</p> <p>CO2. Explain the principles of accounting and book keeping</p> <p>CO3. Apply accounting rules in determining financial results and preparation of financial statement.</p> <p>CO4. Rectify errors caused during preparation of Final accounts.</p> <p>CO5. Use software in preparation of Financial Statements.</p>

## Course Outcomes

S. No.	Course Code	Course Title	Course Objective	Expected Outcome
548	BCA 604D	Intellectual Property Rights	<ul style="list-style-type: none"> <li>• To introduce fundamental aspects of Intellectual property Rights to students who are going to play a major role in development and management of innovative projects in industries.</li> <li>• To disseminate knowledge on patents, patent regime in India and abroad and registration aspects</li> <li>• To disseminate knowledge on copyrights and its related rights and registration aspects</li> <li>• To disseminate knowledge on trademarks and registration aspects</li> <li>• To disseminate knowledge on Design, Geographical Indication (GI), Plant Variety and Layout Design Protection and their registration aspects</li> <li>• To aware about current trends in IPR and Govt. steps in fostering IPR</li> </ul>	<p>CO1. The students once they complete their academic projects, shall get an adequate knowledge on patent and copyright for their innovative research works</p> <p>CO2. During their research career, information in patent documents provide useful insight on novelty of their idea from state-of-the art search. This provide further way for developing their idea or innovations</p> <p>CO3. Pave the way for the students to catch up Intellectual Property(IP) as an career option R&amp;D IP Counsel, Government Jobs –Patent Examiner, Private Jobs, Patent agent and Trademark agent, Entrepreneur</p>
549	BCA 605A	Social Implications of IT	<ul style="list-style-type: none"> <li>• Acquaint student with contemporary and possible future moral problems that arise due to Computerization.</li> <li>• Give a deeper understanding of nature of moral choices.</li> <li>• Help to understand social, economic, legal and cognitive effects of technology.</li> <li>• To identify ethical conflicts and think through the implications of possible solutions to Ethical conflicts</li> </ul>	<p>CO1: Understand the consequences of ignoring and non-compliance with ethical imperatives.</p> <p>CO2: Learn about the best ethical practices and models.</p> <p>CO3: Develop a sound methodology in resolving ethical conflicts and crisis.</p> <p>CO4: Learn about the issues directly related to information technology environment and professionals.</p>

## Course Outcomes

S. No.	Course Code	Course Title	Course Objective	Expected Outcome
550	BCA 605B	Mobile Computing	<ul style="list-style-type: none"> <li>• To understand the various terminology, principles, devices, schemes, concepts, generations, and different methodologies used in Mobile and Wireless Communication Networks.</li> <li>• To introduce the student to the major concepts involved in Wireless LAN (IEEE 802.11), and Bluetooth.</li> <li>• To study the operation of basic cellular system and performance criterion, handoff mechanism, etc.</li> <li>• To expose students to emerging technologies and their potential impact.</li> </ul>	<p>CO1: Understanding of different generations, terminologies, systems, operations and design of wireless and mobile communications.</p> <p>CO2: Acquire sufficient knowledge about IEEE 802.11 and Bluetooth standards.</p> <p>CO3: Appreciate the contribution of Mobile and Wireless Communication networks to overall technological growth</p> <p>CO4: Understand the concepts and technology involved in 3G, 4G and 5G Networks</p>
551	BCA 605C	Cyber Ethics & Crime	<ul style="list-style-type: none"> <li>• To understand the basics of cyber law, its related issues and ethical laws of computer for different countries.</li> <li>• To examine how the online digital world has been inflicted with new cybercrimes, implications for society and law enforcement response and investigating how the computer and electronic devices have become both a target of attack and a tool for criminal activity.</li> </ul>	<p>CO1: Understand the consequences of ignoring and non-compliance with ethical imperatives.</p> <p>CO2: Learn about the best ethical practices and models.</p> <p>CO3: Develop a sound methodology in resolving ethical conflicts and crisis.</p> <p>CO4: Learn about the issues directly related to information technology environment and professionals.</p>
552	BCA 605D	Entrepreneurship	<ul style="list-style-type: none"> <li>• To simulate the real life activities of entrepreneurs in the startup age of a new venture.</li> <li>• To provide the skills to start and build enterprise, implement it successfully</li> <li>• To inculcate skills to manage the transition of a start up to a full-fledged business entity.</li> </ul>	<p>CO1. Examine the characteristics of an entrepreneur as well their role in the economic development of the country.</p> <p>CO2. Process &amp; develop business plan, foreseeing the entry barriers to the industry</p> <p>CO3. Identify stages of growth in entrepreneurial ventures along with changing face of family business in India</p>
553	BCA 606	.NET Lab	<ul style="list-style-type: none"> <li>• To learn programming in C# and dot NET framework.</li> <li>• To develop web applications using C# and dot NET framework.</li> </ul>	<p>CO1. Design console application and windows application.</p> <p>CO2. Design web application.</p> <p>CO3: Learn about the issues directly related to information technology environment.</p>

## Course Outcomes

S. No.	Course Code	Course Title	Course Objective	Expected Outcome
554	BCA 606	PHP Lab	<ul style="list-style-type: none"> <li>• To understand how server-side programming works on the web.</li> <li>• To learn PHP Basic syntax for variable types and calculations.</li> <li>• To use PHP built-in functions and creating custom functions.</li> <li>• To understand POST and GET in form submission.</li> <li>• To provide the necessary knowledge to design and develop dynamic, database-driven web applications using PHP.</li> </ul>	CO1: Understand the PHP and scripting. CO2: Understand Basics of PHP Language . CO3: Working with Databases and Forms. CO4: Working with cookies. CO5: Working on Data and Tables in MYSQL.
555	BCA 607	Major Project	<ul style="list-style-type: none"> <li>• To introduce the concept and methods required for the construction of large software intensive system.</li> <li>• To develop a broad understanding of the discipline of software engineering and management of software system.</li> <li>• To provide an understanding of both theoretical and methodological issues involved in modern software engineering project management and focus strongly on practical techniques.</li> </ul>	CO1: Capability to acquire and apply fundamental principles of engineering. CO2: Be a multi-skilled engineer with good technical knowledge, management, leadership and entrepreneurship skills. CO3: Identify, formulate and model problems and find engineering solution based on a systems approach. CO4: Capability and enthusiasm for self-improvement through continuous professional development and life-long learning.
556	BCA 608	Seminar	<ul style="list-style-type: none"> <li>• To Awareness of how to use values in improving your own professionalism.</li> <li>• To Learning about personal and communication styles for team building.</li> <li>• To identify, formulate and present model problems.</li> <li>• To Learning management of values.</li> </ul>	CO1: Capability to acquire and apply fundamental principles of engineering. CO2: Become master in one's specialized technology CO3: Become updated with all the latest changes in technological world. CO4: Ability to identify, formulate and model problems and find engineering solution based on a systems approach.

## Course Outcomes

S. No.	Course Code	Course Title	Course Objective	Expected Outcome
557	B.ED -101	Childhood and Growing Up	<ul style="list-style-type: none"> <li>• To familiarize student- teachers about the conceptions about child and childhood (Specifically with reference to the Indian Social context)</li> <li>• To develop a critical understanding of the different Social, Educational and Cultural contexts at the core of the exploration of childhood.</li> <li>• To develop an understanding of the different aspects of a Child with diverse abilities in the Social, Cultural and Political context of India</li> <li>• To acquaint them with respect to the role of different agencies in the healthy development of children.</li> </ul>	<p>CO1 Explain the concept of growth &amp; development in relation to characteristics of various stages of growth &amp; development.</p> <p>CO2 Become familiar with theories of child development and their educational implications.</p> <p>CO3 Understand the role of family, school, society in child development.</p> <p>CO4 Describe the role of contemporary issues (issue of marginalization: class, poverty, gender, issues of urbanization and economic change) in child development.</p> <p>CO5 Describe the role of media in deconstruction of significant events.</p>
558	B.ED -102	Contemporary India and Education	<ul style="list-style-type: none"> <li>• To gain an understanding of the concept, meaning, aims and functions of Education</li> <li>• To reflect upon the thoughts of Indian and Western thinkers on Education and explore their implications for practices in schools.</li> <li>• To critically examine the issues and concerns of education in the socio-economic context of India.</li> <li>• To appreciate the need and relevance of the course in being a humane teacher</li> </ul>	<p>CO1 Discuss about the educational thinkers in present era.</p> <p>CO2 Understand the multicultural and multilingual society.</p> <p>CO3 Define the diversity and inequality.</p> <p>CO4 Define and demonstrate the education policies and commissions in present era.</p> <p>CO5 Criticize and evaluate fundamental rights and duties of citizens.</p> <p>CO6 Explain the interactive mode of teaching.</p>
559	B.ED -103	Language Across the Curriculum	<ul style="list-style-type: none"> <li>• To enable student-teacher to understand the nature and structure of language</li> <li>• To help them appreciate the relationship between language, mind and society.</li> <li>• To acquaint them with the process of language acquisition and learning.</li> <li>• To support them in the understanding of different language skills and development of the same.</li> <li>• To develop sensitivity and competency towards catering to a multilingual audience in Schools.</li> </ul>	<p>CO1 Classify the language background of students as the first or second language users.</p> <p>CO2 Write sensitivity to the language diversity that exists in the classroom</p> <p>CO3 Explain and report the nature of classroom discourse and develop strategies for using oral language in the classroom.</p> <p>CO4 Compare the nature of reading comprehension &amp; writing in specific content areas.</p> <p>CO5 Differentiate interplay of language and society.</p> <p>CO6 Teach and investigate function of language and how to use it as a tool.</p>

## Course Outcomes

S. No.	Course Code	Course Title	Course Objective	Expected Outcome
560	B.ED -104	Understanding Disciplines and Subjects	<ul style="list-style-type: none"> <li>• To develop an understanding of the nature of disciplinary knowledge in the school curriculum.</li> <li>• To acquire a conceptual understanding of the impact of school subjects on disciplines.</li> <li>• To develop interest, attitudes and knowledge about the content in respect of framing the syllabus.</li> <li>• To build up a professional, disciplinary subject.</li> </ul>	<p>CO1 Explain meaning and concept disciplinary knowledge in the school curriculum and difference between disciplines &amp; Interdisciplinary Subject.</p> <p>CO2 Discuss and demonstrate of the teaching methods of Social Science.</p> <p>CO3 Describe and analysis of the teaching methods of Science, Mathematics and Language.</p> <p>CO4 Define and criticize the school subject with concern to social justice.</p> <p>CO5 Develop interest, attitudes and knowledge about the content in respect of framing the syllabus.</p>
561	B.ED -105	Creating an Inclusive School	<ul style="list-style-type: none"> <li>• To understand the concept of Inclusive Education.</li> <li>• To identify and address the diverse needs of all learners.</li> <li>• To acquaint with the trends and issues in Inclusive Education</li> <li>• To develop capacity of student- teachers for creating an Inclusive School</li> <li>• To appreciate various inclusive practices to promote Inclusion in the classroom</li> </ul>	<p>CO1 Explain , define and classify the concept, meaning and significance of inclusive education</p> <p>CO2 Classify and illustrate the culture, policies and practices that need to be addressed in order to create an inclusive school.</p> <p>CO3 Discuss and evaluate the many scheme of inclusive education and the roles and responsibilities of the teachers.</p> <p>CO4 Develop Technological advancement and its application</p> <p>CO5 Identify and adapt existing resources for promoting inclusive practice</p>
562	B.ED -106	Reading and Reflecting on Texts	<ol style="list-style-type: none"> <li>1. To enable to Read &amp; Reflect on variety of texts in different ways.</li> <li>2. To develop Metacognitive awareness to become conscious about thinking processes.</li> <li>3. To learn to analyze various text structures to see how they contribute to the comprehension of text.</li> <li>4. To enable to write with a sense of purpose.</li> </ol>	<p>CO1 To develop understanding of the texts by making connections between self observations, experiences, and opinions and critically reflecting through thoughtful and persistent inquiry.</p> <p>CO2 Enabling learner to demonstrate understanding, arising out of interrogation of own assumptions and knowledge to deepen text analysis and focusing assessment of the text.</p> <p>CO3 Categorize themselves with the readings interactively – individually and in a small groups.</p> <p>CO4 To develop the ability of reflective writings in different forms.</p>

## Course Outcomes

S. No.	Course Code	Course Title	Course Objective	Expected Outcome
563	B.ED -201	Learning and Teaching	<ul style="list-style-type: none"> <li>• To create awareness in student-teachers with respect to the range of cognitive capacities and affective processes in human learners.</li> <li>• To acquaint student-teachers with the different contexts of learning and situate schools as a special environment for learning.</li> <li>• To enable them to reflect on their own implicit understanding of the nature and kinds of learning.</li> <li>• To develop an understanding of different theoretical perspectives of learning with a focus on cognitive views of learning.</li> <li>• To familiarize them with the concept and nature of Intelligence, Personality and Adjustment.</li> </ul>	CO1 Develop and demonstrate scientific attitude for the process of teaching & learning CO2 Describe and evaluate an understanding about the relationship of cognitive, social and emotional development with learning process CO3 Define, discuss and illustrate an overall view of teaching & learning style and ideas to enhance these activities CO4 Define and recognize the student – teachers with their teaching skill, component and parameters of effective teaching CO5 Evaluate the perfect teaching by its overall perspectives in detail
564	B.ED -202	Knowledge and Curriculum (Part-I)	<ul style="list-style-type: none"> <li>• To create excellence in the educational system for facing the knowledge of challenges of the twenty first century.</li> <li>• To encourage the application of knowledge skills in the Indian educational institutions.</li> <li>• To realize the important of curriculum modification.</li> <li>• To provide awareness and understanding of social environment.</li> <li>• To transform teacher-pupils in to a vibrant knowledge based society.</li> </ul>	CO1 Understand the source of knowledge with reference of society, culture and modernity. CO2 Define, and evaluate the knowledge and skill in curriculum development. CO3 Explain and differentiate the facts of knowledge. CO4 Understand the curriculum with reference of philosophical, psychological, sociological and scientific basis of education. CO5 Describe the factors and types of curriculum.
565	B.ED -203(1)	1. Draw. & Paint.	<ul style="list-style-type: none"> <li>• Develop the skill of using various teaching methods for teaching of Arts.</li> <li>• Develop the Aesthetic Sense.</li> <li>• Acquaint the students with different techniques of painting.</li> <li>• Develop imagination and sense of appreciation of Arts and interest in teaching of art.</li> <li>• Learn and understand the principles, concept, and elements of art and to apply them in teaching</li> </ul>	CO1 Understand the Principles and importance of Drawing and Painting in life. CO2 Know about the place of Art in general education. CO3 Organize art related exhibitions in classroom. CO4 Understand the importance of Art-room, Art-Museums, and Art-Galleries. CO5 Describe the role of Art in National Integration, Human Values. CO6 Understand and survey the contribution of artists in our India.

## Course Outcomes

S. No.	Course Code	Course Title	Course Objective	Expected Outcome
566	B.ED -203(2)	2. Civics	<ul style="list-style-type: none"> <li>• Explain and Discuss the Meaning, Nature and Scope of Civics.</li> <li>• Explain the Importance of Civics as a School Subject.</li> <li>• Differentiate between Aims and Objectives of Civics.</li> <li>• Explain the meaning of Teaching method and Teaching techniques.</li> </ul>	<p>CO1 Define the knowledge of student teacher regarding the meaning and importance of civics.</p> <p>CO2 Compare the co-relation of civics with other school subjects</p> <p>CO3 Apply appropriate methods in teaching particular topics at different level.</p> <p>CO4 Describe and adapt the use of relevant teaching aids.</p> <p>CO5 Describe and demonstrate the particular concepts, trends, principles, methods etc. with the help of correlation to similar content or situation.</p> <p>CO6 Develop and organize the various skills and abilities for school activities related to the subject.</p>
567	B.ED -203(3)	3. Home Science	<ul style="list-style-type: none"> <li>• To familiarize student-teachers with the meaning and scope of Home Science and Objectives of Teaching Home Science at Higher Secondary Level.</li> <li>• To sensitise them to understand the importance of Teaching Home Science in Schools.</li> <li>• To enable them to know and apply various techniques and approaches of Teaching of Home Science at Higher Secondary level.</li> <li>• To plan instructions effectively for Teaching of Home Science in Schools.</li> <li>• To develop the skills to evaluate student performance effectively with reliable and valid tools.</li> </ul>	<p>CO1 Understand the importance of Home Science and its correlation with other subjects.</p> <p>CO2 Describe aims and objectives of the subject.</p> <p>CO3 Prepare the equipments for home science laboratory.</p> <p>CO4 Understand and uses of teaching aids in home science.</p> <p>CO5 Evaluate the different types of tests in teaching of Home Science.</p>

## Course Outcomes

S. No.	Course Code	Course Title	Course Objective	Expected Outcome
568	B.ED -203(4)	4. Economics	<ul style="list-style-type: none"> <li>• To familiarize the student-teachers with various strategies, methods, techniques and skills of teaching Economics at the senior secondary level.</li> <li>• To develop competence in use of appropriate strategy in relation to the content to be taught.</li> <li>• To inculcate spirit of experimentation for finding out effectiveness of alternative strategies of teaching.</li> <li>• To promote reflection on issues pertaining to teaching of Economics.</li> <li>• To develop competence in designing effective instructional strategies to teach Economics.</li> <li>• To develop ability to design, develop; and use various tools &amp; techniques of evaluation.</li> <li>• To develop awareness about syllabus prescribed by different State Boards.</li> <li>• To develop awareness about recent advancements in teaching of Economics.</li> </ul>	<p>CO1 Define the meaning, Importance, nature, scope and aims of Economics</p> <p>CO2 Assess the aims, objectives and value-outcomes through teaching of Economics.</p> <p>CO3 Design and compare group-activities and project and to use various instructional strategies and methods for effective teaching of the subject.</p> <p>CO4 Examine the correlation of Economics with other school-subjects</p> <p>CO5 Develop and demonstrate necessary skills to use various teaching aids, (Particularly locally available material aids).</p> <p>CO6 Develop appropriate attitude towards the subjects and country's economic</p>
569	B.ED -203(5)	5. English	<ul style="list-style-type: none"> <li>• To understand the need and importance of English language.</li> <li>• To develop proficiency in the language.</li> <li>• To be familiar with the psycholinguistics and sociolinguistics aspects of language.</li> <li>• To enable the students to use technology to enrich language teaching.</li> <li>• To be aware of the pedagogical practices required for teaching English as second language.</li> <li>• To facilitate the effective use of learning resources.</li> <li>• To encourage continuous professional development.</li> <li>• To develop an appreciation of the role of English in both academics and life.</li> </ul>	<p>CO1 Discuss and Develop a good understanding of the basic concepts in second language teaching.</p> <p>CO2 Choose and Teach basic language skills as listening, speaking, reading and writing and integrate them for communicative purpose.</p> <p>CO3 Describe and demonstrate different approaches and methods of teaching English as second language.</p> <p>CO4 Interpret and Prepare lesson plans on different and prescribed aspects of English as second language.</p> <p>CO5 Build competencies through different modes.</p> <p>CO6 Develop Enhancing quality in teaching learning process.</p>

## Course Outcomes

S. No.	Course Code	Course Title	Course Objective	Expected Outcome
570	B.ED -203(6)	6. Geography	<ul style="list-style-type: none"> <li>• To equip the student-teachers to establish correlation between geographic Knowledge and cultural background.</li> <li>• To develop geographic sense in them.</li> <li>• To understand the inter relationships between different Subjects and Disciplines.</li> <li>• To develop an understanding of the need for Teaching and Learning Geography.</li> <li>• To make use of various methods of teaching Geography.</li> <li>• To acquaint with the techniques of evaluation in Geography.</li> </ul>	<p>CO1 Describe the modern concept of Geography</p> <p>CO2 Prepare yearly plan, unit plan, and lesson plan for different classes.</p> <p>CO3 Develop maps and charts to illustrate the contents of different classes and use them effectively.</p> <p>CO4 Apply appropriate methods and techniques of teachings of particular topics at different levels.</p> <p>CO5 Plan field trips and local surveys.</p> <p>CO6 Differentiate and justify achievement test and diagnostic test, administration of the test, analysis of results and make suggestion for remedial teaching</p>
571	B.ED -203(7)	7. Hindi	<ul style="list-style-type: none"> <li>• शिक्षा में भाषा के महत्व को रेखांकित कर सकेंगे।</li> <li>• हिन्दी भाषा शिक्षण के उद्देश्यों की पूर्ति के लिए प्रभावी साधनों एवं समुचित विधियों का प्रयोग कर सकेंगे।</li> <li>• 17वीं और 18वीं स्थानों में अपेक्षित भाषा—कौशलों का विकास कर सकेंगे।</li> <li>• प्रथम भाषा अधिगम की समस्याओं को समझकर उन्हें दूर करने का प्रयास कर सकेंगे।</li> <li>• विद्यार्थियों के अधिगम का समुचित मूल्यांकन कर सकेंगे।</li> </ul>	<p>CO1 भाषा संरचना में हिन्दी भाषा तत्वों का ज्ञान देना।</p> <p>CO2 श्रवण, भाषण, वाचन एवं लेखन सम्बन्धी भाषायी काशलों का ज्ञान देना।</p> <p>CO3 हिन्दी भाषा शिक्षण प्रणालियों के उपयोग का ज्ञान देना।</p> <p>CO4 हिन्दी की विद्याओं एवं उनके व्यवहारिक शिक्षक की संस्थितियों का ज्ञान देना।</p> <p>CO5 हिन्दी भाषा शिक्षण में दृश्य—श्रव्य उपकरणों के व्यवहारिक उपयोग का ज्ञान देना।</p> <p>CO6 हिन्दी शिक्षण में मूल्यांकन के महत्व, मूल्यांकन की स्थितियों व विद्यार्थियों का ज्ञान देना।</p>
572	B.ED -203(8)	8. History	<ul style="list-style-type: none"> <li>• To develop in the student-teachers efficiency and effectiveness in teaching and learning of History.</li> <li>• To understand the importance of History and its place in school curriculum.</li> <li>• To equip student-teachers with the techniques of evaluation in History.</li> <li>• To develop the efficiency in using audio-visual aids, graph, timeline and resource material in History</li> <li>• To practice learner centered methods and techniques in the classroom.</li> <li>• To develop a sense of pride in our History and Culture.</li> </ul>	<p>CO1 Understand the nature, scope and importance of the subject.</p> <p>CO2 Explain and use different approaches methods and techniques of teaching learning of subject.</p> <p>CO3 Explain and understand the structure of subject.</p> <p>CO4 Explain importance and use of core elements values and life skills.</p> <p>CO5 Analyze the various resources in teaching learning of subject.</p> <p>CO6 To analyze and evaluate the new trends of current issues in subject.</p>

## Course Outcomes

S. No.	Course Code	Course Title	Course Objective	Expected Outcome
573	B.ED -203(9)	9. Mathematics	<ul style="list-style-type: none"> <li>• To understand the nature of Mathematics.</li> <li>• To understand the historical developments leading to concepts in modern Mathematics.</li> <li>• To understand the learning theories and their applications in Mathematics Education.</li> <li>• To improve the competencies in secondary level Mathematics.</li> <li>• To understand the various instructional strategies and their appropriate use in teaching Mathematics at the secondary level.</li> <li>• To understand the preparation and use of diagnostics test and organize remedial teaching.</li> <li>• To apply appropriate evaluation techniques in Mathematics.</li> </ul>	<p>CO1 Solve and identify the uses and significance of Mathematics in daily life.</p> <p>CO2 Adapt and discuss the various approaches of teaching Mathematics and to use them judiciously.</p> <p>CO3 Explain and categorize the teaching methods of mathematics and instruction for the classroom.</p> <p>CO4 Organise curricular activities.</p> <p>CO5 Plan and recommend activities to develop aesthetics of Mathematics</p> <p>CO6 Define and demonstrate their knowledge of content in mathematics.</p>
574	B.ED -203(10)	10. Sanskrit	<ul style="list-style-type: none"> <li>• भाषा के विभिन्न रूपों की समझ उत्पन्न करना।</li> <li>• भाषा संरचना की प्रकृति की समझ विकसित करना।</li> <li>• भाषा कौशल एवं तृतीय भाषा शिक्षण के आधारभूत सिद्धान्त एवं उद्देश्यों का ज्ञान करना।</li> <li>• पाठ्यक्रम में संस्कृत की स्थिति का अवबोध करना।</li> <li>• संस्कृत भाषा शिक्षण कौशल का अभ्यास करना।</li> <li>• संस्कृत शिक्षण में मूल्यांकन प्रक्रिया की समझ विस्तृत करना।</li> </ul>	<p>CO1 भाषा की विभिन्न भूमिकाओं को समझ सकेंगे।</p> <p>CO2 भारत में संस्कृत भाषा की स्थिति एवं महत्व को समझ सकेंगे।</p> <p>CO3 संस्कृत भाषा के तत्वों का प्रत्यास्मरण कर सकेंगे और उनका सही प्रयोग कर सकेंगे।</p> <p>CO4 संस्कृत शिक्षण के सिद्धान्त, सूत्र, सामान्य एवं विशिष्ट उद्देश्यों को समझ सकेंगे।</p> <p>CO5 मूलभूत भाषा कौशलों, जैसे— श्रवण, भाशण, वाचन एवं लेखन के सम्प्रत्यय, महत्व एवं विकास को समझ सकेंगे।</p> <p>CO6 संस्कृत शिक्षण की विभिन्न विधियों एवं उपागमों का प्रत्यास्मरण कर सकेंगे और इनका समुचित प्रयोग कर सकेंगे।</p>

## Course Outcomes

S. No.	Course Code	Course Title	Course Objective	Expected Outcome
575	B.ED -203(11)	11. Social Studies	<ul style="list-style-type: none"> <li>• To develop understanding about the basic differences between Social Studies and Social Sciences.</li> <li>• To understand the need for teaching Social Sciences as an integrated discipline</li> <li>• To develop the ability to justify the relevance of social Sciences in terms of Contemporary events.</li> <li>• To gain knowledge about the different approaches associated with the discipline</li> <li>• To develop certain professional skills useful for classroom teaching.</li> <li>• To develop notion of Democracy, National integration etc.</li> </ul>	<p>CO1 Define the concept of social studies and explain its relative position in the syllabus.</p> <p>CO2 Understand the aims and objectives of teaching Social Science.</p> <p>CO3 Prepare Unit plans and lesson plans for different classes.</p> <p>CO4 Apply appropriate methods and techniques of teaching to particular topics at different levels.</p> <p>CO5 Understand the current events and community resources in teaching of social studies.</p>
576	B.ED -203(12)	12. Biology	<ul style="list-style-type: none"> <li>• To develop in student-teachers an understanding of the nature of Biology and its interface with Society</li> <li>• Acquire a conceptual understanding of the Pedagogy of Biology.</li> <li>• To Acquire and learn specific laboratory skills to conduct practical work in Biology.</li> <li>• Develop and use the techniques of CCE for assessment of student's performance.</li> <li>• To evolve as a reflective practitioner through use of innovative practices in the teaching of Biology.</li> </ul>	<p>CO1 Describe the nature, place, values and objective of teaching Biology at Senior Secondary level.</p> <p>CO2 Evaluate the existing syllabus of Biology prescribed for Secondary/Senior Secondary level in the state of Rajasthan.</p> <p>CO3 Develop yearly plan, unit plan and lesson for Senior Secondary classes.</p> <p>CO4 Apply and contrast the various methods and approaches of teaching Biology.</p> <p>CO5 Examine and develop the ability of instructional support system.</p> <p>CO6 Plan and organize Biological practical in the Laboratory.</p>

## Course Outcomes

S. No.	Course Code	Course Title	Course Objective	Expected Outcome
577	B.ED -203(13)	13. Chemistry	<ul style="list-style-type: none"> <li>• To enable the student-teachers to develop Chemistry as a discipline in Science</li> <li>• To critically analyze the curriculum/evaluation practices of teaching of Chemistry in School to bring about changes in future to promote better pedagogy.</li> <li>• To enable the students to use ICT for making teaching – learning more effective and joyful.</li> <li>• To develop the abilities for planning and organizing chemistry laboratory.</li> <li>• To evolve as reflective practitioners in Chemistry Education through innovative practices.</li> </ul>	<p>CO1 Describe the nature, place, values and objectives of teaching Chemistry at Secondary/Senior Secondary level.</p> <p>CO2 Compare and illustrate the correlation with other school subjects.</p> <p>CO3 Evaluate the existing syllabus of Chemistry prescribed for Secondary/Senior Secondary level in the State of Rajasthan.</p> <p>CO4 Develop yearly plan, unit plan and lesson plan for Secondary/Senior Secondary classes.</p> <p>CO5 Organize the training in Scientific method and develop Scientific temper among their students.</p> <p>CO6 Apply the various methods and approaches of teaching Chemistry in classroom.</p>
578	B.ED -203(14)	14. General Science	<ul style="list-style-type: none"> <li>• Familiarize with nature of General Science.</li> <li>• Formulate instructional objectives in behavioral terms.</li> <li>• Critically evaluate the existing science curriculum at secondary level.</li> <li>• Understand the basic concepts of General Science.</li> </ul>	<p>CO1 Describe the nature, scope values and objectives of teaching science at Secondary level.</p> <p>CO2 Develop competence in teaching different topics of Science effectively</p> <p>CO3 Define and develop the scientific temper &amp; provide teaching in scientific method to their student</p> <p>CO4 Demonstrate the various methods with appropriateness of content, level and classroom situations to make pupil's learning meaningful.</p> <p>CO5 Apply the instructional materials effectively in the teaching of Science.</p> <p>CO6 Organize Co-curricular activities &amp; practical work in Science.</p>

## Course Outcomes

S. No.	Course Code	Course Title	Course Objective	Expected Outcome
579	B.ED -203(15)	15. Physics	<ul style="list-style-type: none"> <li>• To develop in student-teachers an understanding of the nature of Physics and its interface with society.</li> <li>• Acquire a conceptual understanding of the Pedagogy of Physics.</li> <li>• To Acquire and learn specific laboratory skills to conduct practical work in Physics.</li> <li>• Develop and use the techniques for evaluation of student's performance.</li> <li>• To critically analyse the Curriculum and textbooks from the dimension of development of Scientific Values.</li> </ul>	CO1 Define the modern concept of physics CO2 Describe the aims and objectives of teaching physics. CO3 Define the contribution of eminent physicists in connection with the development of physics. CO4 Plan curriculum at Secondary and Senior Secondary level CO5 Analyse the syllabus of the subject in relation to its applicability to practical situations. CO6 Develop scientific attitude and provide training in scientific method to their students.
580	B.ED -203(16)	16. Book Keeping	<ul style="list-style-type: none"> <li>• To student-teachers will develop the understanding of the nature of Accountancy as a subject at Senior Secondary Stage.</li> <li>• To understand the rationale of including Accountancy in the school curriculum,</li> <li>• To make use of workbooks and practice sets for gaining practical knowledge of the world of Accountancy.</li> <li>• To equip them with the essential qualities of an ideal Accounting teacher,</li> <li>• To familiarize them with the techniques of evaluation in Accountancy.</li> <li>• To develop in them the awareness about curricular innovations in Accountancy.</li> </ul>	CO1 Describe and calculate of concept mapping and curricular elements in Business Studies teaching CO2 Describe the Curriculum in Business Studies at senior secondary level. CO3 Develop a critical appraisal of existing Business Studies curriculum at sr.secondary stage prescribed by RBSE / CBSE. CO4 Teach the qualities of text book of Business Studies. CO5 Plan the use I.C.T. in Business Studies Teaching. CO6 Develop the ethics & Professional growth of a Business Studies teacher.

## Course Outcomes

S. No.	Course Code	Course Title	Course Objective	Expected Outcome
581	B.ED -203(17)	17. Comm. Practice	<ul style="list-style-type: none"> <li>• Develop an understanding of content of commerce and accountancy.</li> <li>• Identify the role of IT in Commerce Education.</li> <li>• Develop an appreciation towards the role of commerce in daily life.</li> <li>• Understand the Commercial implications of various theories of learning.</li> </ul>	<p>CO1 Develop and discover the concept of mapping and curricular elements in Financial Accounting teaching.</p> <p>CO2 Design and organize the Curriculum in Financial Accounting at senior secondary level.</p> <p>CO3 Categorize the existing Financial Accounting curriculum at senior secondary stage prescribed by RBSE / CBSE</p> <p>CO4 Define the qualities of text book of Financial Accountancy.</p> <p>CO5 Develop and apply the necessary skills to teaching methods. Categorize the various instructional/learning methods.</p> <p>CO6 Develop the ethics &amp; Professional growth of a Financial Accounting teacher.</p>
582	<b>B.ED 203(18)</b>	<b>PEDAGOGY OF SCHOOL SUBJECT : URDU</b>	<ul style="list-style-type: none"> <li>• Understand the basic concepts and function of language with special reference to Urdu.</li> <li>• Acquire knowledge of objective of teaching Urdu at the secondary stage.</li> <li>• Acquire knowledge of different methods of teaching at the secondary stage.</li> <li>• Plan and teach lesson in Urdu prose, poetry, grammar and composition.</li> <li>• Understand constructive approach to language teaching and learning.</li> <li>• Prepare unit plans, Daily lesson plans and to analyse the subject content in term of language skills and teaching objectives.</li> <li>• Develop and use of teaching aids in the class room both print and audio visual materials and ICT (internet and computer technology).</li> <li>• Develop an insight into the symbiotic relationship between curriculum syllabus and text book.</li> <li>• Knowledge of evaluation system in Urdu and to methodically prepare exams and test paper in Urdu.</li> <li>• Conduct remedial teaching in Urdu.</li> </ul>	<p>CO1 To understand the nature, scope and importance of the subject.</p> <p>CO2 To understand the co-relation of the subject with other subjects.</p> <p>CO3 To know and understand the objectives of teaching of the subject at secondary and higher secondary level.</p> <p>CO4 To explain the use of different methods of teaching Urdu.</p> <p>CO5 Describe the skills of Urdu language. Produce the different teaching skills associated with teaching of Urdu.</p>

## Course Outcomes

S. No.	Course Code	Course Title	Course Objective	Expected Outcome
583	<b>B.ED 203(19)</b>	<b>PEDAGOGY OF SCHOOL SUBJECT : AGRICULTURAL SCIENCE</b>	<ul style="list-style-type: none"> <li>• Familiarize with nature of Agricultural Science.</li> <li>• Formulate instructional objectives in behavioral terms.</li> <li>• Critically evaluate the existing science curriculum at secondary level.</li> <li>• Understand the basic concepts of Agricultural Science.</li> </ul>	<p>CO1 Understand the nature, scope and objectives of agriculture science at Secondary level.</p> <p>CO2 Analyze text books of various levels in agriculture science.</p> <p>CO3 Uses of different methods in agriculture science.</p> <p>CO4 Prepare of lesson plan through various techniques.</p> <p>CO5 Applying the instructional materials effectively in the teaching of agriculture Science.</p> <p>CO6 Organizing the Co-curricular activities &amp; practical work in Science.</p>
584	B.ED -204	Drama and Art in Education	<ul style="list-style-type: none"> <li>• Understand the role of fine arts in enhancing the creative potentials of an individual;</li> <li>• genuine exploration, experience and free expression;</li> <li>• Respond to the beauty in different Art forms;</li> <li>• Develop ability to appreciate the inherent rhythm, beauty and harmony in visual and performing art forms (specifically regional, traditional and classical art forms)</li> <li>• Enhance skills for integrating different Art forms across school curriculum at secondary level ;</li> <li>• Develop awareness regarding the rich cultural and artistic heritage of India and the specific regions;</li> <li>• Deepen understanding, appreciation and skills in one chosen medium through self work and evaluate self as an artist;</li> <li>• Develop the ability to use drama and other visual and performing art processes to generate new knowledge, understanding and perception of the world;</li> <li>• Get acquainted with the vast range of the regional and traditional art forms in the light of National Integratio.</li> </ul>	<p>CO1 Describe the role of fine arts in enhancing the creative potentials of an individual</p> <p>CO2 Define and explain the concept of different art forms (all the visual and performing arts)</p> <p>CO3 Compare to the beauty in different Art forms.</p> <p>CO4 Discover and produce the skills for integrating different Art forms across school curriculum at secondary level.</p> <p>CO5 Develop skill to create artistic pieces through waste materials.</p> <p>CO6 Demonstrating socially important issues through drama.</p>

## Course Outcomes

S. No.	Course Code	Course Title	Course Objective	Expected Outcome
585	B.ED -205	PRACTICALS- School Pre-Internship & Criticism (4 Weeks) Per- Internship & Activities-	<ul style="list-style-type: none"> <li>• To adapt modern techniques for teaching skill development.</li> <li>• To familiarize themselves with the concept of curriculum and co-curricular activities.</li> <li>• To prepare a lesson plan.</li> <li>• To observe children and the teaching learning process in systematic manner.</li> </ul>	CO1 Describe the micro teaching skills. CO2 Define co-curricular activities and open air session. CO3 Develop skill to create criticism lesson for pedagogy subjects.
586	B.ED -301	Gender School and Society	<ul style="list-style-type: none"> <li>• To develop understanding of some key concepts and terms and relate them with their context in understanding the power relations with respect to Educating and Education.</li> <li>• To develop an understanding of the paradigm shift from Women studies to Gender Studies based on the historical backdrop.</li> <li>• To reflect on different theories of Gender and Education and relate it to power relations.</li> <li>• To analyse the institutions involved in Socialisation processes and see how socialization practices impact power relations and identity</li> </ul>	CO1 Describe and evaluate the gender bias, gender stereotype, empowerment, gender parity, equity and equality, patriarchy and feminism. CO2 Define and explain the gradual paradigm shift from women studies to gender studies and some important landmarks in connection with gender and education in the historical and contemporary period CO3 Illustrate about the gender issues in school, curriculum, and textual materials. CO4 Describe Gender, Power and Sexuality relate to education (in terms of access, curriculum and pedagogy)
587	B.ED -302	Knowledge and Curriculum (Part-II)	<ul style="list-style-type: none"> <li>• To enable student teacher appreciate the relationship between schooling, Education and Knowledge.</li> <li>• To examine the different sources of knowledge and their kinds.</li> <li>• To familiarize students with the process of constructions of knowledge.</li> <li>• To critically analyze the role of Education in reproducing dominance and challenging marginalization with reference to class, caste, gender and religion.</li> </ul>	CO1 Understand the different kinds of knowledge. CO2 Define and explain the sociological and the psychological bases of curriculum construction. CO3 Demonstrate the various types of models of curriculum development. CO4 Evaluate the role of infrastructural support in teaching and learning process.. CO5 Understand the school culture and organisational ethos.

## Course Outcomes

S. No.	Course Code	Course Title	Course Objective	Expected Outcome
588	B.ED -303(1)	1. Peace Education	<ul style="list-style-type: none"> <li>• To understand the concept of peace education.</li> <li>• To acquire the knowledge about peaceful mind makes peaceful world.</li> <li>• To understand the theory and practice of peace education.</li> <li>• To understand the philosophical thoughts for peace.</li> <li>• To create frameworks for achieving peaceful and nonviolent societies.</li> </ul>	<p>CO1 Define and explain the concept and importance of peace.</p> <p>CO2 Describe and discover the role of social agencies.</p> <p>CO3 Evaluate the strategies and methods of teaching peace education.</p> <p>CO4 Develop of new models and technologies for peace education.</p> <p>CO5 Apply the thoughts of great personalities in promoting peace.</p>
589	B.ED -303(2)	2. Guidance and Counseling	<ul style="list-style-type: none"> <li>• To appreciate the nature, purpose and need for guidance and counseling.</li> <li>• To familiarize the responsibilities and moral obligation of a counselor.</li> <li>• To develop capacity of applying the techniques and procedures of guidance and Counseling.</li> <li>• To explore the sources of occupational information, their types and modes of Dissemination.</li> <li>• To understand the concept, importance and theories of career development.</li> </ul>	<p>CO1 Describe and assess the concepts of guidance and counselling.</p> <p>CO2 Define and explain the testing devices and techniques of guidance.</p> <p>CO3 Describe and justify of collection and dissemination of occupational guidance.</p> <p>CO4 Analyz the student-teachers to the problems faced in the contemporary world.</p> <p>CO5 Categorize the working of guidance centers.</p> <p>CO6 Evaluate the guidance &amp; counselling for school level students.</p>
590	B.ED -303(3)	3. Environmental Education	<ul style="list-style-type: none"> <li>• To understand and reflect on the concept and characteristics of environmental education from various aspects.</li> <li>• To develop awareness understanding and concern about environment and associated problems, and to develop knowledge, skills, attitudes, motivation and commitment to work individually and collectively towards their solutions and prevention of new ones.</li> <li>• To do teaching learning about the environment, through the environment and for the environment.</li> <li>• To develop special skill needed to link theoretical understanding with practical/applied aspects.</li> </ul>	<p>CO1 Describe philosophical and epistemological basis of EVS as a composite area of study that draws upon the science, social science and environmental education</p> <p>CO2 Organize and evaluate comprehensive units for holistic view.</p> <p>CO3 Explain the issues of conservation and environmental regeneration has been infused at appropriate places in all the textbooks.</p> <p>CO4 Discuss and analyze to environment concerns through the process of inquiry.</p> <p>CO5 To develop the sense of awareness about the environment hazards and its causes and remedies</p>

## Course Outcomes

S. No.	Course Code	Course Title	Course Objective	Expected Outcome
591	B.ED -303(4)	4. Health and Physical Education	<ul style="list-style-type: none"> <li>• To acquaint pupil teachers with the concept of holistic health.</li> <li>• To enable them to understand the various dimensions &amp; determinants of health.</li> <li>• To acquaint them to school health program and its importance.</li> <li>• To enable them to understand the need &amp; importance of Physical Education.</li> <li>• To develop organization skills in organizing inter house tournaments and sports meet.</li> <li>• To understand the need and relevance of Yoga and develop the skills in yogic practices.</li> </ul>	<p>CO1 Define and explain the concept, aims &amp; objectives of Health &amp; physical education.</p> <p>CO2 Describe and categorize the various communicable diseases.</p> <p>CO3 Describe and teach good posture, Balance diet, and first aid.</p> <p>CO4 Explain and classify the characteristics of hygienic environment along with contributing factors and itsimportance.</p> <p>CO5 Discuss the rules &amp; regulations of physical education.</p> <p>Decide different physical educationactivities.</p> <p>CO6 Practicing tournaments, competitions &amp; Athletic Meets</p>
592	B.ED -304	Assessment for Learning	<ul style="list-style-type: none"> <li>• Understand the process of evaluation.</li> <li>• Develop the skill in preparing, administering and interpreting the achievement test.</li> <li>• Understand and use different techniques and tools of evaluation for learning.</li> </ul>	<p>CO1 Describe and adapt the children's progress and their psychological development.</p> <p>CO2 Explain and analyze the different dimensions of learning and related assessment procedures, tools and techniques.</p> <p>CO3 Explain and evaluate the policy perspectives on examination and their implementation practices.</p> <p>CO4 Develop and describe the critical understanding of issues in assessment and explore realistic, comprehensive and dynamic assessment process.</p> <p>CO5 Adapt the good process to learning and make more confident and creative learners.</p> <p>CO6 Describe and evaluate the role of assessment in enhancing learning Critiques the traditional purpose of assessment</p>

## Course Outcomes

S. No.	Course Code	Course Title	Course Objective	Expected Outcome
593	B.ED -305	Critical Understanding of ICT	<ul style="list-style-type: none"> <li>• To equip student – teachers in the effective use of ICT tools, software applications and digital resources.</li> <li>• To familiarise them with the understanding and skills of integration of ICT in teaching learning, evaluation and management of an institution.</li> <li>• To acquire the skill of organising and creating her/his own digital resources.</li> <li>• To sensitise them to practice safe, ethical and legal ways of using ICT.</li> <li>• To enable them to use ICT for making classroom processes more inclusive and supportive in addressing multiple learning abilities.</li> </ul>	CO1 Apply the effective technology in Education. CO2 Adapt and conclude the new trends, techniques in education along with learning CO3 Describe the basic elements of computers and their uses. CO4 Describe and practice the aims and objectives of teaching computer science in secondary and Sr. Secondary schools and help them to plan learning activities according to those objectives. CO5 Apply the Basic Commands in DOS & Windows. CO6 Define and explain the various MS Office Applications like Word, Excel and PowerPoint
594	B.ED -401(1)	1. Draw. & Paint.	<ul style="list-style-type: none"> <li>• Develop the skill of using various teaching methods for teaching of Arts.</li> <li>• Develop the Aesthetic Sense.</li> <li>• Acquaint the students with different techniques of painting.</li> <li>• Develop imagination and sense of appreciation of Arts and interest in teaching of art.</li> <li>• Learn and understand the principles, concept, and elements of art and to apply them in teaching and daily life.</li> </ul>	CO1 Understand the Principles and importance of Drawing and Painting in life. CO2 Know about the place of Art in general education. CO3 Organize art related exhibitions in classroom. CO4 Understand the importance of Art-room, Art-Museums, and Art-Galleries. CO5 Describe the role of Art in National Integration, Human Values. CO6 Understand and survey the contribution of artists in our India.

## Course Outcomes

S. No.	Course Code	Course Title	Course Objective	Expected Outcome
595	B.ED -401(2)	2. Civics	<ul style="list-style-type: none"> <li>• Explain and Discuss the Meaning, Nature and Scope of Civics.</li> <li>• Explain the Importance of Civics as a School Subject.</li> <li>• Differentiate between Aims and Objectives of Civics.</li> <li>• Explain the meaning of Teaching method and Teaching techniques.</li> </ul>	<p>CO1 Define the knowledge of student teacher regarding the meaning and importance of civics.</p> <p>CO2 Compare the co-relation of civics with other school subjects</p> <p>CO3 Apply appropriate methods in teaching particular topics at different level.</p> <p>CO4 Describe and adapt the use of relevant teaching aids.</p> <p>CO5 Describe and demonstrate the particular concepts, trends, principles, methods etc. with the help of correlation to similar content or situation.</p> <p>CO6 Develop and organize the various skills and abilities for school activities related to the subject.</p>
596	B.ED -401(3)	3. Home Science	<ul style="list-style-type: none"> <li>• To familiarize student-teachers with the meaning and scope of Home Science and Objectives of Teaching Home Science at Higher Secondary Level.</li> <li>• To sensitise them to understand the importance of Teaching Home Science in Schools.</li> <li>• To enable them to know and apply various techniques and approaches of Teaching of Home Science at Higher Secondary level.</li> <li>• To plan instructions effectively for Teaching of Home Science in Schools.</li> <li>• To develop the skills to evaluate student performance effectively with reliable and valid tools.</li> </ul>	<p>CO1 Understand the importance of Home Science and its correlation with other subjects.</p> <p>CO2 Describe aims and objectives of the subject.</p> <p>CO3 Prepare the equipments for home science laboratory.</p> <p>CO4 Understand and uses of teaching aids in home science.</p> <p>CO5 Evaluate the different types of tests in teaching of Home Science.</p>

## Course Outcomes

S. No.	Course Code	Course Title	Course Objective	Expected Outcome
597	B.ED -401(4)	4. Economics	<ul style="list-style-type: none"> <li>• To familiarize the student-teachers with various strategies, methods, techniques and skills of teaching Economics at the senior secondary level.</li> <li>• To develop competence in use of appropriate strategy in relation to the content to be taught.</li> <li>• To inculcate spirit of experimentation for finding out effectiveness of alternative strategies of teaching.</li> <li>• To promote reflection on issues pertaining to teaching of Economics.</li> <li>• To develop competence in designing effective instructional strategies to teach Economics.</li> <li>• To develop ability to design, develop; and use various tools &amp; techniques of evaluation.</li> <li>• To develop awareness about syllabus prescribed by different State Boards.</li> <li>• To develop awareness about recent advancements in teaching of Economics.</li> </ul>	CO1 Define the meaning, Importance, nature, scope and aims of Economics CO2 Assess the aims, objectives and value-outcomes through teaching of Economics. CO3 Design and compare group-activities and project and to use various instructional strategies and methods for effective teaching of the subject. CO4 Examine the correlation of Economics with other school-subjects CO5 Develop and demonstrate necessary skills to use various teaching aids, (Particularly locally available material aids). CO6 Develop appropriate attitude towards the subjects and country's economic
598	B.ED -401(5)	5. English	<ul style="list-style-type: none"> <li>• To understand the need and importance of English language.</li> <li>• To develop proficiency in the language.</li> <li>• To be familiar with the psycholinguistics and sociolinguistics aspects of language.</li> <li>• To enable the students to use technology to enrich language teaching.</li> <li>• To be aware of the pedagogical practices required for teaching English as second language.</li> <li>• To facilitate the effective use of learning resources.</li> <li>• To encourage continuous professional development.</li> <li>• To develop an appreciation of the role of English in both academics and life.</li> </ul>	CO1 Discuss and Develop a good understanding of the basic concepts in second language teaching. CO2 Choose and Teach basic language skills as listening, speaking, reading and writing and integrate them for communicative purpose. CO3 Describe and demonstrate different approaches and methods of teaching English as second language. CO4 Interpret and Prepare lesson plans on different and prescribed aspects of English as second language. CO5 Build competencies through different modes. CO6 Develop Enhancing quality in teaching learning process.

## Course Outcomes

S. No.	Course Code	Course Title	Course Objective	Expected Outcome
599	B.ED -401(6)	6. Geography	<ul style="list-style-type: none"> <li>• To equip the student-teachers to establish correlation between geographic Knowledge andcultural background.</li> <li>• To develop geographic sense in them.</li> <li>• To understand the inter relationships between different Subjects and Disciplines.</li> <li>• To develop an understanding of the need for Teaching and Learning Geography.</li> <li>• To make use of various methods of teaching Geography.</li> <li>• To acquaint with the techniques of evaluation in Geography.</li> </ul>	CO1 Describe the modern concept of Geography CO2 Prepare yearly plan, unit plan, and lesson plan for different classes. CO3 Develop maps and charts to illustrate the contents of different classes and use them effectively. CO4 Apply appropriate methods and techniques of teachings of particular topics at different levels. CO5 Plan field trips and local surveys. CO6 Differentiate and justify achievement test and diagnostic test, administration of the test, analysis of results and make suggestion for remedial teaching
600	B.ED -401(7)	7. Hindi	<ul style="list-style-type: none"> <li>• शिक्षा में भाषा के महत्व को रेखांकित कर सकेंगे।</li> <li>• हिन्दी भाषा शिक्षण के उद्देश्यों की पूर्ति के लिए प्रभावी साधनों एवं समुचित विधियों का प्रयोग कर सकेंगे।</li> <li>• स्वयं में अपेक्षित भाषा-कौशलों का विकास कर सकेंगे।</li> <li>• प्रथम भाषा अधिगम की समस्याओं को समझकर उन्हें दूर करने का प्रयास कर सकेंगे।</li> <li>• विद्यार्थियों के अधिगम का समुचित मूल्यांकन कर सकेंगे।</li> </ul>	CO1 भाषा संरचना में हिन्दी भाषा तत्वों का ज्ञान देना। CO2 श्रवण, भाषण, वाचन एवं लेखन सम्बन्धी भाषायी काँशलों का ज्ञान देना। CO3 हिन्दी भाषा शिक्षण प्रणालियों के उपयोग का ज्ञान देना। CO4 हिन्दी की विद्याओं एवं उनके व्यवहारिक शिक्षक की संस्थितियों का ज्ञान देना। CO5 हिन्दी भाषा शिक्षण में दृश्य-श्रव्य उपकरणों के व्यवहारिक उपयोग का ज्ञान देना। CO6 हिन्दी शिक्षण में मूल्यांकन के महत्व, मूल्यांकन की संस्थितियों व विद्याओं का ज्ञान देना।

## Course Outcomes

S. No.	Course Code	Course Title	Course Objective	Expected Outcome
601	B.ED -401(8)	8. History	<ul style="list-style-type: none"> <li>• To develop in the student-teachers efficiency and effectiveness in teaching and learning of History.</li> <li>• To understand the importance of History and its place in school curriculum.</li> <li>• To equip student-teachers with the techniques of evaluation in History.</li> <li>• To develop the efficiency in using audio-visual aids, graph, timeline and resource material in History</li> <li>• To practice learner centered methods and techniques in the classroom.</li> <li>• To develop a sense of pride in our History and Culture.</li> </ul>	<p>CO1 Understand the nature, scope and importance of the subject.</p> <p>CO2 Explain and use different approaches methods and techniques of teaching learning of subject.</p> <p>CO3 Explain and understand the structure of subject.</p> <p>CO4 Explain importance and use of core elements values and life skills.</p> <p>CO5 Analyze the various resources in teaching learning of subject.</p> <p>CO6 To analyze and evaluate the new trends of current issues in subject.</p>
602	B.ED -401(9)	9. Mathematics	<ul style="list-style-type: none"> <li>• To understand the nature of Mathematics.</li> <li>• To understand the historical developments leading to concepts in modern Mathematics.</li> <li>• To understand the learning theories and their applications in Mathematics Education.</li> <li>• To improve the competencies in secondary level Mathematics.</li> <li>• To understand the various instructional strategies and their appropriate use in teaching Mathematics at the secondary level.</li> <li>• To understand the preparation and use of diagnostics test and organize remedial teaching.</li> <li>• To apply appropriate evaluation techniques in Mathematics.</li> </ul>	<p>CO1 Solve and identify the uses and significance of Mathematics in daily life.</p> <p>CO2 Adapt and discuss the various approaches of teaching Mathematics and to use them judiciously.</p> <p>CO3 Explain and categorize the teaching methods of mathematics and instruction for the classroom.</p> <p>CO4 Organise curricular activities.</p> <p>CO5 Plan and recommend activities to develop aesthetics of Mathematics</p> <p>CO6 Define and demonstrate their knowledge of content in mathematics.</p>

## Course Outcomes

S. No.	Course Code	Course Title	Course Objective	Expected Outcome
603	B.ED -401(10)	10. Sanskrit	<ul style="list-style-type: none"> <li>• भाषा के विभिन्न रूपों की समझ उत्पन्न करना।</li> <li>• भाषा संरचना की प्रकृति की समझ विकसित करना।</li> <li>• भाषा कौशल एवं तृतीय भाषा शिक्षण के आधारभूत सिद्धान्त एवं उद्देश्यों का ज्ञान करना।</li> <li>• पाठ्यक्रम में संस्कृत की रिथ्ति का अवबोध करना।</li> <li>• संस्कृत भाषा शिक्षण कौशल का अभ्यास करना।</li> <li>• संस्कृत शिक्षण में मूल्यांकन प्रक्रिया की समझ विस्तृत करना।</li> </ul>	<p>CO1 भाषा की विभिन्न भूमिकाओं को समझ सकेंगे।</p> <p>CO2 भारत में संस्कृत भाषा की रिथ्ति एवं महत्व को समझ सकेंगे।</p> <p>CO3 संस्कृत भाषा के तत्वों का प्रत्यास्मरण कर सकेंगे और उनका सही प्रयोग कर सकेंगे।</p> <p>CO4 संस्कृत शिक्षण के सिद्धान्त, सूत्र, सामान्य एवं विशिष्ट उद्देश्यों को समझ सकेंगे।</p> <p>CO5 मूलभूत भाषा कौशलों, जैसे— श्रवण, भाशण, वाचन एवं लेखन के सम्प्रत्यय, महत्व एवं विकास को समझ सकेंगे।</p> <p>CO6 संस्कृत शिक्षण की विभिन्न विधियों एवं उपागमों का प्रत्यास्मरण कर सकेंगे और इनका समुचित प्रयोग कर सकेंगे।</p>
604	B.ED -401(11)	11. Social Studies	<ul style="list-style-type: none"> <li>• To develop understanding about the basic differences between Social Studies and Social Sciences.</li> <li>• To understand the need for teaching Social Sciences as an integrated discipline</li> <li>• To develop the ability to justify the relevance of social Sciences in terms of Contemporary events.</li> <li>• To gain knowledge about the different approaches associated with the discipline</li> <li>• To develop certain professional skills useful for classroom teaching.</li> <li>• To develop notion of Democracy, National integration etc.</li> </ul>	<p>CO1 Define the concept of social studies and explain its relative position in the syllabus.</p> <p>CO2 Understand the aims and objectives of teaching Social Science.</p> <p>CO3 Prepare Unit plans and lesson plans for different classes.</p> <p>CO4 Apply appropriate methods and techniques of teaching to particular topics at different levels.</p> <p>CO5 Understand the current events and community resources in teaching of social studies.</p>
605	B.ED -401(12)	12. Biology	<ul style="list-style-type: none"> <li>• To develop in student-teachers an understanding of the nature of Biology and its interface with Society</li> <li>• Acquire a conceptual understanding of the Pedagogy of Biology.</li> <li>• To Acquire and learn specific laboratory skills to conduct practical work in Biology.</li> <li>• Develop and use the techniques of CCE for assessment of student's performance.</li> <li>• To evolve as a reflective practitioner through use of innovative practices in the teaching of Biology.</li> </ul>	<p>CO1 Describe the nature, place, values and objective of teaching Biology at Senior Secondary level.</p> <p>CO2 Evaluate the existing syllabus of Biology prescribed for Secondary/Senior Secondary level in the state of Rajasthan.</p> <p>CO3 Develop yearly plan, unit plan and lesson for Senior Secondary classes.</p> <p>CO4 Apply and contrast the various methods and approaches of teaching Biology.</p> <p>CO5 Examine and develop the ability of instructional support system.</p> <p>CO6 Plan and organize Biological practical in the Laboratory.</p>

## Course Outcomes

S. No.	Course Code	Course Title	Course Objective	Expected Outcome
606	B.ED -401(13)	13. Chemistry	<ul style="list-style-type: none"> <li>• To enable the student-teachers to develop Chemistry as a discipline in Science</li> <li>• To critically analyze the curriculum/evaluation practices of teaching of Chemistry in School to bring about changes in future to promote better pedagogy.</li> <li>• To enable the students to use ICT for making teaching – learning more effective and joyful.</li> <li>• To develop the abilities for planning and organizing chemistry laboratory.</li> <li>• To evolve as reflective practitioners in Chemistry Education through innovative practices.</li> </ul>	<p>CO1 Describe the nature, place, values and objectives of teaching Chemistry at Secondary/Senior Secondary level.</p> <p>CO2 Compare and illustrate the correlation with other school subjects.</p> <p>CO3 Evaluate the existing syllabus of Chemistry prescribed for Secondary/Senior Secondary level in the State of Rajasthan.</p> <p>CO4 Develop yearly plan, unit plan and lesson plan for Secondary/Senior Secondary classes.</p> <p>CO5 Organize the training in Scientific method and develop Scientific temper among their students.</p> <p>CO6 Apply the various methods and approaches of teaching Chemistry in classroom.</p>
607	B.ED -401(14)	14. General Science	<ul style="list-style-type: none"> <li>• Familiarize with nature of General Science.</li> <li>• Formulate instructional objectives in behavioral terms.</li> <li>• Critically evaluate the existing science curriculum at secondary level.</li> <li>• Understand the basic concepts of General Science.</li> </ul>	<p>CO1 Describe the nature, scope values and objectives of teaching science at Secondary level.</p> <p>CO2 Develop competence in teaching different topics of Science effectively</p> <p>CO3 Define and develop the scientific temper &amp; provide teaching in scientific method to their student</p> <p>CO4 Demonstrate the various methods with appropriateness of content, level and classroom situations to make pupil's learning meaningful.</p> <p>CO5 Apply the instructional materials effectively in the teaching of Science.</p> <p>CO6 Organize Co-curricular activities &amp; practical work in Science.</p>

## Course Outcomes

S. No.	Course Code	Course Title	Course Objective	Expected Outcome
608	B.ED -401(15)	15. Physics	<ul style="list-style-type: none"> <li>• To develop in student-teachers an understanding of the nature of Physics and its interface with society.</li> <li>• Acquire a conceptual understanding of the Pedagogy of Physics.</li> <li>• To Acquire and learn specific laboratory skills to conduct practical work in Physics.</li> <li>• Develop and use the techniques for evaluation of student's performance.</li> <li>• To critically analyse the Curriculum and textbooks from the dimension of development of Scientific Values.</li> </ul>	CO1 Define the modern concept of physics CO2 Describe the aims and objectives of teaching physics. CO3 Define the contribution of eminent physicists in connection with the development of physics. CO4 Plan curriculum at Secondary and Senior Secondary level CO5 Analyse the syllabus of the subject in relation to its applicability to practical situations. CO6 Develop scientific attitude and provide training in scientific method to their students.
609	B.ED -401(16)	16. Book Keeping	<ul style="list-style-type: none"> <li>• To student-teachers will develop the understanding of the nature of Accountancy as a subject at Senior Secondary Stage.</li> <li>• To understand the rationale of including Accountancy in the school curriculum,</li> <li>• To make use of workbooks and practice sets for gaining practical knowledge of the world of Accountancy.</li> <li>• To equip them with the essential qualities of an ideal Accounting teacher,</li> <li>• To familiarize them with the techniques of evaluation in Accountancy.</li> <li>• To develop in them the awareness about curricular innovations in Accountancy.</li> </ul>	CO1 Describe and calculate of concept mapping and curricular elements in Business Studies teaching CO2 Describe the Curriculum in Business Studies at senior secondary level. CO3 Develop a critical appraisal of existing Business Studies curriculum at sr.secondary stage prescribed by RBSE / CBSE. CO4 Teach the qualities of text book of Business Studies. CO5 Plan the use I.C.T. in Business Studies Teaching. CO6 Develop the ethics & Professional growth of a Business Studies teacher.

## Course Outcomes

S. No.	Course Code	Course Title	Course Objective	Expected Outcome
610	B.ED -401(17)	17. Comm. Practice	<ul style="list-style-type: none"> <li>• Develop an understanding of content of commerce and accountancy.</li> <li>• Identify the role of IT in Commerce Education.</li> <li>• Develop an appreciation towards the role of commerce in daily life.</li> <li>• Understand the Commercial implications if various theories of learning.</li> </ul>	<p>CO1 Develop and discover the concept of mapping and curricular elements in Financial Accounting teaching.</p> <p>CO2 Design and organize the Curriculum in Financial Accounting at senior secondary level.</p> <p>CO3 Categorize the existing Financial Accounting curriculum at senior secondary stage prescribed by RBSE / CBSE</p> <p>CO4 Define the qualities of text book of Financial Accountancy.</p> <p>CO5 Develop and apply the necessary skills to teaching methods. Categorize the various instructional/learning methods.</p> <p>CO6 Develop the ethics &amp; Professional growth of a Financial Accounting teacher.</p>

## Course Outcomes

S. No.	Course Code	Course Title	Course Objective	Expected Outcome
611	<b>B.ED -401(18)</b>	<b>PEDAGOGY OF SCHOOL SUBJECT : URDU</b>	<ul style="list-style-type: none"> <li>• Understand the basic concepts and function of language with special reference to Urdu.</li> <li>• Acquire knowledge of objective of teaching Urdu at the secondary stage.</li> <li>• Acquire knowledge of different methods of teaching at the secondary stage.</li> <li>• Plan and teach lesson in Urdu prose, poetry, grammar and composition.</li> <li>• Understand constructive approach to language teaching and learning.</li> <li>• Prepare unit plans, Daily lesson plans and to analyses the subject content in term of language skills and teaching objectives.</li> <li>• Develop and use of teaching aids in the class room both print and audio visual materials and ICT (internet and computer technology).</li> <li>• Develop and insight into the symbiotic relationship between curriculum syllabus and text book.</li> <li>• Knowledge of evaluation system in Urdu and to methodically prepare exams and test paper in Urdu.</li> <li>• Conduct remedial teaching in Urdu.</li> </ul>	<p>CO1 To understand the nature, scope and importance of the subject.</p> <p>CO2 To understand the co-relation of the subject with other subject.</p> <p>CO3 To know and understand the objectives of teaching of the subject at secondary and higher secondary level.</p> <p>CO4 To explain the use of different methods of teaching urdu.</p> <p>CO5 Describe the skills of Urdu language. Produce the different teaching skills associated with teaching of Urdu.</p>
612	<b>B.ED -401(19)</b>	<b>PEDAGOGY OF SCHOOL SUBJECT : AGRICULTURAL SCIENCE</b>	<ul style="list-style-type: none"> <li>• Familiarize with nature of Agricultural Science.</li> <li>• Formulate instructional objectives in behavioral terms.</li> <li>• Critically evaluate the existing science curriculum at secondary level.</li> <li>• Understand the basic concepts of Agricultural Science.</li> </ul>	<p>CO1 Understand the nature, scope and objectives of agriculture science at Secondary level.</p> <p>CO2 Analyze text books of various levels in agriculture science.</p> <p>CO3 Uses of different methods in agriculture science.</p> <p>CO4 Prepare of lesson plan through various techniques.</p> <p>CO5 Applying the instructional materials effectively in the teaching of agriculture Science.</p> <p>CO6 Organizing the Co-curricular activities &amp; practical work in Science.</p>

## Course Outcomes

S. No.	Course Code	Course Title	Course Objective	Expected Outcome
613	B.ED -402	Understanding the Self	<ul style="list-style-type: none"> <li>• To develop understanding of some key concepts and terms and relate them with their context in understanding the power relations with respect to Educating and Education.</li> <li>• To develop an understanding of the paradigm shift from Women studies to Gender Studies based on the historical backdrop.</li> <li>• To reflect on different theories of Gender and Education and relate it to power relations.</li> <li>• To analyse the institutions involved in Socialisation processes and see how socialization practices impact power relations and identity formation.</li> </ul>	<p>CO1 Develop the skills for personal growth of their students in the classroom.</p> <p>CO2 Define and explain the self concept and the professional identity.</p> <p>CO3 Select and use the techniques of self understanding.</p> <p>CO4 Analyse the stereotypes and prejudices.</p> <p>CO5 Describe the impact of political, historical, and social forces on identity formation.</p>
614	B.ED -403	PRACTICALS- School - Internship (16 Weeks) & Final Lesson	<ul style="list-style-type: none"> <li>• To adapt modern techniques for teaching skill development.</li> <li>• To familiarize themselves with the concept of curriculum and co-curricular activities.</li> <li>• To prepare a lesson plan.</li> <li>• To observe children and the teaching learning process in systematic manner.</li> </ul>	<p>CO1 Describe the observation skills.</p> <p>CO2 Define the daily lesson plan for teaching.</p> <p>CO3 Develop skill to create final lesson for pedagogy subjects.</p>
615	BPT 101	Anatomy	<ul style="list-style-type: none"> <li>• Understanding of gross anatomy of various body parts.</li> <li>• Application of knowledge of anatomy to learn evaluation and application of physical therapy.</li> <li>• Major emphasis of learning is towards Musculoskeletal, cardio-respiratory and nervous system</li> </ul>	<p>CO1 Understand &amp; identify all gross anatomical structures, particular emphasis will be placed on description of bones, joints, muscles, brain, cardio-pulmonary and nervous systems as these are related to the application of Physiotherapy</p> <p>CO2 Demonstrate knowledge in human anatomy as is necessary for the study and practice of physiotherapy</p> <p>CO3 Apply information gained about human health and medical research as to its social, environmental, and ethical implications as part of being a responsible citizen</p> <p>CO4 Use scientific laboratory equipment in order to gather and analyze data on human anatomy</p> <p>CO5 Implement the gross anatomy knowledge while treating the patients.</p>

## Course Outcomes

S. No.	Course Code	Course Title	Course Objective	Expected Outcome
616	BPT 102	Physiology	<ul style="list-style-type: none"> <li>• Define homeostasis and explain how homeostatic mechanisms normally maintain a constant interior milieu.</li> <li>• State the functions of each organ system of the body, explain the mechanisms by which each functions, and relate the functions and the anatomy and histology of each organ system.</li> <li>• Understand and demonstrate the interrelations of the organ systems to each other.</li> <li>• Predict and explain the integrated responses of the organ systems of the body to physiological and pathological stresses.</li> <li>• Explain the patho physiology of common diseases related to the organ systems of the body.</li> </ul>	CO1 Understand the basis of normal human physiology with special emphasis on the functioning of the cardiovascular, musculo-skeletal and nervous systems. CO2 Explain the role of body systems and mechanisms in maintaining homeostasis CO3 Understand how abnormal Physiology affects human function and dysfunction of the human body. CO4 Evaluate Breath sounds, Blood pressure, Respiratory rate, Heart rate and Pulmonary Function Tests CO5 Demonstrate an understanding of elementary human physiology and Bio-Chemistry
617	BPT 103	Bio-Chemstry	<ul style="list-style-type: none"> <li>• To understand the biochemical basis of life sciences.</li> <li>• To understand the different lab tests and test significances.</li> <li>• To understand the biological and biochemical processes.</li> </ul>	CO1 Demonstrate comprehensive understanding of biochemistry CO2 Acquire the knowledge in biochemistry that are required to be practiced in community and at all levels of health care system CO3 Understand relevant investigations which will help to know about the important medical conditions. CO4 Identify various nutritional disorders in physiotherapeutic system of medicine CO5 Interpret the common clinical biochemistry investigations report of patients in clinics and Hospitals.

## Course Outcomes

S. No.	Course Code	Course Title	Course Objective	Expected Outcome
618	BPT104	Sociology	<ul style="list-style-type: none"> <li>• To introduce students to the basic social processes of society, social institutions and patterns of social behavior.</li> <li>• To train students to understand and to interpret objectively the role of social processes, social institutions and social interactions in their lives.</li> <li>• Engage in activities that contribute to the betterment of society and behave ethically and responsible in social environment.</li> </ul>	CO1 Explains the role of sociology and its application CO2 Summarize an understanding of the role of socio-cultural factors as determinants of health and behavior in health and sickness. CO3 Relate to therapeutic situations in the practice of physiotherapy CO4 Understand the role of family and community in the development of behaviors CO5 Develop a holistic outlook toward the structure of society and community resources
619	BPT 105	General & Clinical Psychology	<ul style="list-style-type: none"> <li>• Define the term Psychology&amp; its importance in the Health delivery System &amp; will gain knowledge of Psychological maturation during human Development &amp; growth &amp; alterations during aging process.</li> <li>• Understand the importance of psychological status of the person in Health &amp;disease, environmental &amp;emotional influence on the mind &amp; personality.</li> <li>• Acquire the Knowledge as to how to deal with the patients.</li> <li>• Socioeconomic and cultural issues related to morbidity owing to the physical disability and handicaps.</li> </ul>	CO1 Understand the elementary principles of behavior for applying in the therapeutic environment. CO2 Know about psychology and its importance in the health care delivery system and gain knowledge of psychological maturation during human development, growth and alteration during ageing process. CO3 Recognize and help with the psychological factors involved in disability, pain, disfigurement, unconscious patients, chronic illness, death, bereavement and medical-surgical patients/conditions CO4 Perform psychosocial assessment of patients in various developmental stages, understand the concept of stress and its relationship to health, sickness and one's profession and learn counselling techniques to help those in need. CO5 Implementation of various techniques and therapies in the treatment / management of clinical disorders

## Course Outcomes

S. No.	Course Code	Course Title	Course Objective	Expected Outcome
620	BPT 106	Basic Principles in Physiotherapy	<ul style="list-style-type: none"> <li>• To understand the basic principles of exercise therapy.</li> <li>• To understand the basic principles of electrotherapy.</li> <li>• To understand the concept of Manual therapy.</li> </ul>	<p>CO1 Explain about the basics of exercise and electrotherapy.</p> <p>CO2 Understand the principles, technique and effects of exercise as a therapeutic modality in the restoration of physical function</p> <p>CO3 Analyze the various types of therapeutic exercises, movements and demonstrate different techniques and describe their effects</p> <p>CO4 Practice different exercise therapy techniques and gain confidence in performing these skills before implementing the same on the patients so that high quality patient care is ensured</p> <p>CO5 Communicate with patients in a professional and ethical manner</p>
621	BPT 107	English Communicatioin	<ol style="list-style-type: none"> <li>1. To identify common communication problems that may be holding learners back</li> <li>2. To identify what their non-verbal messages are communicating to others</li> <li>3. To understand role of communication in teaching-learning process</li> <li>4. To learn to communicate through the digital media</li> <li>5. To understand the importance of empathetic listening</li> <li>6. To explore communication beyond language.</li> </ol>	CO1:Understanding of what good communication skills are and what they can do to improve their abilities.

## Course Outcomes

S. No.	Course Code	Course Title	Course Objective	Expected Outcome
622	BPT 201	Pathology & Micro-Biology	<ul style="list-style-type: none"> <li>• Acquire the knowledge of concepts of cell injury and changes produced in different tissues and organs.</li> <li>• Acquire the knowledge of concepts of Neoplasia with reference to the Etiology gross and microscopic features diagnosis and prognosis in different tissues and organs of the body.</li> <li>• Correlate normal and altered morphology of different organ systems in different diseases needed for understanding disease process and their clinical significance (with special emphasis on neuro-Musculo- skeletal and cardio-respiratory system).</li> </ul>	<p>CO1 Learn the pathological changes in various conditions, diseases and disorders, which are commonly treated by physiotherapy.</p> <p>CO2 Demonstrate an understanding of the pathology of common diseases that therapists would encounter in their daily practice</p> <p>CO3 Understanding of core concepts of microbiology</p> <p>CO4 Know the methods used in study bacteria and can classify them.</p> <p>CO5 Understand the various pathogens of humanity like bacteria's, viruses and fungi.</p>
623	BPT 202	Pharmacology	<ul style="list-style-type: none"> <li>• To understand pharmaco-kinetics, pharmaco-dynamics.</li> <li>• Usage of common drugs with indications, contraindications, side-effects.</li> <li>• Course is not prescription oriented.</li> <li>• To understand the drug action that may affect the physical therapy treatment.</li> </ul>	<p>CO1 Possess a relevant knowledge in basic principles of pharmacology and its recent advances</p> <p>CO2 Understand the basic pharmacology of common drugs used, their importance in the overall treatment including Physiotherapy</p> <p>CO3 Understand the general principles of drug action on the gastric system of body.</p> <p>CO4 Understand the general principles of various antibiotics and the handling of drugs by the body.</p>
624	BPT 203	Bio-Mechanics	<ul style="list-style-type: none"> <li>• To understand the biomechanical principles.</li> <li>• To understand structure and function of human body.</li> <li>• To understand application of various Biomechanical modalities</li> </ul>	<p>CO1 Analyze normal human movement from a global perspective, integrating biomechanics, muscle mechanics and motor control theory</p> <p>CO2 Experience quantitative methods of movement analysis of spine by using various methods</p> <p>CO3 Explain the kinetics and kinematics of upper limb and lower limb</p> <p>CO4 Evaluation methods of the musculoskeletal system</p> <p>CO5 Utilize quantitative methods of Gait &amp;Posture analysis using various methods in physiotherapy</p>

## Course Outcomes

S. No.	Course Code	Course Title	Course Objective	Expected Outcome
625	BPT 204	Exercise Therapy	<ul style="list-style-type: none"> <li>• To understand the knowledge of physical therapy.</li> <li>• To apply therapeutic exercises</li> <li>• To understand the different approaches in manual therapy.</li> </ul>	<p>CO1 Describe the basic principles of exercise therapy and communicate with the patient in a professional and ethical manner</p> <p>CO2 Practice various assessment strategies like Goniometry, Tone assessment, Muscle power assessment etc for detailed learning</p> <p>CO3 Understand principles and procedures, indications, contraindications and precautions, appropriate methods of application of each of the assessment strategy and treatment techniques hands on models.</p> <p>CO4 Categorize various therapeutic techniques that can be used in physiotherapy</p> <p>CO5 Evaluate high quality, ethical, effective, and cost efficient practices by students and gain expertise in the exercise prescription to patients</p>
626	BPT 205	Electrotherapy	<ul style="list-style-type: none"> <li>• To describe the basic physics which is used in electrotherapy modalities.</li> <li>• To explain the construction of electrotherapy modalities.</li> <li>• To understand the indications and contra-indications of different electrical modalities.</li> </ul>	<p>CO1 Construct the principles, technique and effects of electrotherapy as a therapeutic modality in the restoration of physical function in various conditions in physiotherapy</p> <p>CO2 Describe the indications and contra-indications of various types of electrotherapy modalities and equipment's</p> <p>CO3 Understanding the instrumentation, Biophysical principles and effects, dangers, safety measures, judicial use, appropriate methods of application, contraindications of the various low, medium and high frequency equipments.</p> <p>CO4 Categorize various electrotherapeutic techniques that can be used in physiotherapy</p> <p>CO5 Evaluate high quality, ethical, effective, and cost efficient practices by students and gain expertise in the electrotherapeutic system of therapy prescription to patients</p>

## Course Outcomes

S. No.	Course Code	Course Title	Course Objective	Expected Outcome
627	BPT 206	Ethics and Law in Physiotherapy	<ul style="list-style-type: none"> <li>• To understand the ethical principles in physiotherapy.</li> <li>• To understand the rights of patients.</li> <li>• To understand the laws and legal concepts in physiotherapy.</li> </ul>	CO1 Implementation of the ethical principles of physiotherapy in clinical settings. CO2 Adapt a behavior as per professional standard . CO3 Establish a good rapport with patient and other staffs while working in clinical settings. CO4 Possess a knowledge about the governing body of profession CO5 Understand the medico-legal issues in physiotherapy
628	BPT 301	General Medicine	<ul style="list-style-type: none"> <li>• To understand the diseases and its pathogenesis.</li> <li>• To understand the different lab tests and test significances.</li> <li>• To understand the biological and biochemical processes</li> </ul>	CO1 Demonstrate comprehensive understanding of general diseases and its pathology. CO2 Acquire the knowledge in medicine that are required to be practiced in community and at all levels of health care system CO3 Understand relevant investigations which will help to know about the important medical conditions CO4 Observe the sign & symptoms of different medical conditions. CO5 Demonstrate the ability to conduct a focused medical history and targeted physical examination appropriate to patient's chief complaint.
629	BPT 302	General Surgery and Obstetrics & Gynecology	<ul style="list-style-type: none"> <li>• Understand operative technique, surgical anatomy and pathology.</li> <li>• Read about common surgical problems and principles.</li> <li>• Understand the normal progress of pregnancy and delivery .</li> <li>• Understand the general surgeries of ENT and ophthalmology .</li> <li>• Demonstrate sufficient understanding of basic sciences and the clinical applications related to the Special surgeries to be able to integrate this knowledge into Clinical practice.</li> </ul>	CO1 Explain the concepts and knowledge of the general terminology, surgical incisions and postoperative care after various surgeries. CO2 Explain the various abdominal, thoracic and cardiac surgeries with skin grafting procedures. CO3 Understand the anatomy and physiology in Obstetrics and Gynecology and also should be familiar with common eye and ear problems and its treatment. CO4 Evaluate the common investigations like X Rays, MRI,s , CT Scans in relation of physiotherapy CO5 Adopt ethical principles and maintain proper etiquette in dealings with patients, relatives and other health personnel and to respect the rights of the patient including the right to information and second opinion.

## Course Outcomes

S. No.	Course Code	Course Title	Course Objective	Expected Outcome
630	BPT 303	Clinical Orthopedics	<ul style="list-style-type: none"> <li>• To understand the human skeletal system and pathogenesis of diseases related with skeletal system.</li> <li>• To understand the different surgical procedure and its significances.</li> <li>• To understand the anatomy and physiology of human skeletal system.</li> </ul>	<p>CO1 Remember the concepts in skeletal system that is required to be practiced in community and at all levels of health care system.</p> <p>CO2 Understand the common operative procedures.</p> <p>CO3 Demonstrate comprehensive understanding of skeletal system including bones and joints.</p> <p>CO4 Assess of all the major and minor joints using special tests.</p> <p>CO5 Evaluation of all the relevant investigations which will help to know about the important medical and orthopedic conditions</p>
631	BPT 304	Clinical Neurology & Paediatrics	<ul style="list-style-type: none"> <li>• To understand pathology related with nervous system .</li> <li>• To understand the different surgical procedure and its significances.</li> <li>• To understand the anatomy and physiology of nervous system</li> </ul>	<p>CO1 Demonstrate comprehensive understanding of nervous system</p> <p>CO2 Understand relevant clinical features which will help to know about the important medical conditions</p> <p>CO3 Acquire the knowledge in nervous system that are required to be practiced in community and apply the same at all levels of health care system in physiotherapy</p> <p>CO4 Interpret the important medical and neurological conditions in physiotherapy</p> <p>CO5 Assess and differentiate neurological disorders.</p>
632	BPT305	Research Methodology & Bio-Statistics	<ul style="list-style-type: none"> <li>• To understand the significance of various research methodology.</li> <li>• To understand the principles of biostatistics and its significances.</li> <li>• To understand the applied methodology for research.</li> </ul>	<p>CO1 Remembering various methodology of research and biostatics in physiotherapy</p> <p>CO2 Demonstrate understanding of the concepts of research methodology and biostatistics that are required in the profession and community at all levels of research process.</p> <p>CO3 Apply the knowledge and concepts of research methodology and biostatistics in physiotherapy</p> <p>CO4 Analyze the principle concepts of biostatistics and research in physiotherapy</p> <p>CO5 Interpret the data collected while practicing the techniques on subjects during clinical postings by using the concepts of research methods and biostatics learnt.</p>

## Course Outcomes

S. No.	Course Code	Course Title	Course Objective	Expected Outcome
633	BPT 306	Community Medicine	<ul style="list-style-type: none"> <li>• To understand the problems associated with the community.</li> <li>• To understand the different preventive and curative methods for communicable diseases.</li> <li>• To understand the role of social workers in community health.</li> </ul>	<p>CO1 Demonstrate comprehensive understanding of community health workers.</p> <p>CO2 Acquire the knowledge in preventive and curative measures that are required to be practiced in community and at all levels of health care system.</p> <p>CO3 Understand relevant investigations which will help to know about the important medical conditions and occupational health conditions.</p> <p>CO4 Describe the common community diseases.</p> <p>CO5 Evaluate the influence of nutritional deficiency on community.</p>
634	BPT 307	Supervised Clinical Training	<ul style="list-style-type: none"> <li>• To demonstrate knowledge of the clinical site's organization, administration, policies and procedures.</li> <li>• To review the Physical Therapy documentation including the PT POC, goals, and objectives:</li> <li>• To review the patient health record prior to treatment.</li> <li>• To describe safe environments, appropriate risk management strategies, and emergency responses.</li> </ul>	<p>CO1 Students will successfully demonstrate knowledge of the clinical site's organization, administration, policies and procedures, organizational planning and operation.</p> <p>CO2 Under direct personal supervision, students will review the Physical Therapy documentation including the PT POC, goals, and objectives.</p> <p>CO3 Under direct personal supervision, students will review the patient health record prior to treatment.</p> <p>CO4 Under direct personal supervision, students will describe safe environments, appropriate risk management strategies, and emergency responses.</p>
635	BPT 401	Physiotherapeutic in Orthopaedic Conditions	<ul style="list-style-type: none"> <li>• To integrate the physiotherapeutic knowledge of orthopedic and Traumatology.</li> <li>• To improve skills in clinical situation of dysfunction and musculoskeletal pathology.</li> <li>• To make student able to identify disabilities, plan and set treatment goals.</li> </ul>	<p>CO1 Examine relevant investigations technique which will help to diagnosed various orthopedic and sports conditions.</p> <p>CO2 Plan clinical decision making ability and treatment techniques in different musculoskeletal conditions with physiotherapeutic approach</p> <p>CO3 Implement pre and post operative management/special techniques.</p> <p>CO4 Evaluate degenerative joint and spine diseases.</p> <p>CO5 Understand the principles of sports physiotherapy.</p>

## Course Outcomes

S. No.	Course Code	Course Title	Course Objective	Expected Outcome
636	BPT 402	Physiotherapeutic in Neurological Conditions	<ul style="list-style-type: none"> <li>• Student will be able to identify disability due to neurological dysfunction, set treatment goals.</li> <li>• Apply skills in exercise therapy, electrotherapy in clinical situation to restore neurological function.</li> <li>• Integrate the knowledge gain by students in clinical situation of dysfunction due to pathology in nervous system.</li> </ul>	<p>CO1 Understand theoretical knowledge with clinical assessment.</p> <p>CO2 Evaluate relevant investigations technique which will help to diagnosed various Neurological condition conditions</p> <p>CO3 Plan clinical decision making ability with different physiotherapeutic treatment techniques in different neurological conditions.</p> <p>CO4 Analyze various spinal cord conditions.</p> <p>CO5 Plan the treatment of various disorders related to childhood and old age.</p>
637	BPT 403	Physiotherapy in Gen. Medicine & Surgical Condition	<ul style="list-style-type: none"> <li>• Able to integrate theoretical knowledge with clinical assessment.</li> <li>• Develop the ability to collect history, perform relevant clinical assessment and frame appropriate electrotherapeutic and exercise therapy management for the patients.</li> <li>• Demonstrate clinical decision making ability and provide appropriate patient care.</li> <li>• Develop effective communication with patients, family, colleagues and students</li> <li>• To carry out research and publications towards upliftment of the field of Physiotherapy.</li> </ul>	<p>CO1 Understanding the knowledge on Basic Medical sciences, Human Movement Sciences, Various medical Conditions and Surgical Treatments to identify Psychological, Social, Economical, Cultural aspects of diseases and its impact on community.</p> <p>CO2 Apply the knowledge to perform a safe, systematic and appropriate physiotherapy assessment and treatment for various medical Conditions.</p> <p>CO3 Examine the various pathological changes and make the treatment plan accordingly.</p> <p>CO4 Examine the wound and deformity to give proper treatment plan.</p> <p>CO5 Decide the treatment plan according to surgical procedure performed.</p>
638	BPT 404	Physiotherapy in Cardiothoracic Conditions	<ul style="list-style-type: none"> <li>• Identify discuss and analysis of various cardiothoracic dysfunction and arrive at appropriate functional diagnosis.</li> <li>• Acquire knowledge of evaluation and physiotherapeutic treatment for various cardiothoracic physiotherapy.</li> <li>• Select strategies for cure, care and prevention, adopt rehabilitative measure for maximal possible functional independence</li> </ul>	<p>CO1 Evaluate relevant investigations technique which will help to diagnosed various cardiothoracic conditions</p> <p>CO2 Analyze various cardio thoracic ICU management techniques</p> <p>CO3 Understanding and acquiring the Knowledge of various investigating procedure for cardiac and thoracic conditions.</p> <p>CO4 Plan clinical decision making ability with the various physiotherapy treatment approaches in different cardiac and thoracic condition.</p> <p>CO5 Perform pre and post operative management.</p>

## Course Outcomes

S. No.	Course Code	Course Title	Course Objective	Expected Outcome
639	BPT 405	Rationale of Rehabilitation	<ul style="list-style-type: none"> <li>• Understand role in the management of the disability with in rehabilitation team.</li> <li>• Understand the concept of team approach in rehabilitation.</li> <li>• Understand the medical and surgical aspect of disabling conditions</li> </ul>	CO1 Understand the principle of organization and administration. CO2 Formulate appropriate goal in treatment and rehabilitation CO3 Identify the residual potential in patient with partial or total disability. CO4 Classify communication disorders and able to manage them. CO5 Examine social problems and evaluate disability.
640	BPT 406	Minor Project & Clinical Training	<ul style="list-style-type: none"> <li>• To identification of the problem</li> <li>• To use modern research tools/methods.</li> <li>• To design and conduct experiments and identify the solution of the problem/s.</li> </ul>	CO1: Enable the Students to undertake short research project under the direction of guide CO2: impart skills in preparing detailed report describing the project and results. CO3: enable the students to undertake fabrication work of new experimental set up/devices CO4: Effectively communicate by making an oral presentation before an evaluation committee
641	BPT 501	Clinical Internship & Project	<p>To undertake a research study under the guidance of Guide.</p> <p>To undergo a project viva-voice by examining committee.</p>	CO1: Demonstrate the skill to evaluate, diagnose (physical diagnosis) and manage subjects under supervision of a faculty. CO2: Demonstrate the records and relevant patient's information, treatment and follow up. CO3: Demonstrate skill and presentation of a patient under his/her during clinical meetings.
642	BBA 101	Environmental Studies	<ol style="list-style-type: none"> <li>1. To provide student with an understanding of the natural, human and social dimensions of local and wider environments.</li> <li>2. To provide students with opportunities to engage in active learning</li> <li>3. To encourage students to use a wide range of skills, and acquire open, critical and responsible attitudes.</li> </ol>	CO1 Recognise the impact of environmental depletion especially on ecosystem and biodiversity CO2 Identify factors causing land, water , air and noise pollution CO3 Determine the effects of pollution CO4 Develop keen understanding of non conventional energy source , solid waste management and technologies for sustainable development CO5 Understand the environment legislations in India

## Course Outcomes

S. No.	Course Code	Course Title	Course Objective	Expected Outcome
643	BBA 102	English	<p>1. To Understand the factors that influence use of grammar and vocabulary in speech and writing</p> <p>2. To Relate and apply the different ways in which grammar is described and applied.</p>	<p>CO1 Understand and analyze sentence structures and its type</p> <p>CO2 Review the grammatical forms of parts of speech and Apply these forms in specific communicative contexts, which include: class activities, homework assignments, reading of texts and writing</p> <p>CO3 Describe and give example on use of specific tenses in written and spoken English</p> <p>CO4 Determine paragraph patterns, writer techniques, and conclusions.</p> <p>CO5 Write a letter or a paragraph on a given issue or topic</p>
644	BBA 103	Computer Applications in Business– I	<p>1. To introduce the basic concepts of computers.</p> <p>2. To familiarize with computer and its applications in the relevant fields and expose them to other related papers of IT</p>	<p>CO1 Know and explain about the evolution of computer systems and its basic components.</p> <p>CO2 Explain with the help of a diagram, peripheral devices of a computer</p> <p>CO3 Describe the basic networking concepts</p> <p>CO4 Understand and apply word based and technologies used in the field of management</p> <p>CO5 Understand and Apply formatting and editing features to enhance worksheets</p>
645	BBA 104	Principles of Management	<p>1. To gain an understanding of principles and functions of management.</p> <p>2. To gain insights into history and development of management thought.</p> <p>3. To analyze the managerial issues and problems arising in an organization</p>	<p>CO1 Define application of management concepts to understand the major internal features of a business system and the environment in which it operates.</p> <p>CO2 Know and explain the managerial actions of planning, organizing and controlling with an ethical look.</p> <p>CO3 Demonstrate critical and analytical thinking when presented with managerial problems and express their views and opinions on managerial issues</p> <p>CO4 Understand and analyze the HR requirement in the organization</p> <p>CO5 Analyze different motivational theories and choose best effective motivational strategies for the organization. Adapt the best communication strategies</p>

## Course Outcomes

S. No.	Course Code	Course Title	Course Objective	Expected Outcome
646	BBA 105	Business Accounting	<ol style="list-style-type: none"> <li>1. To understand the concept and role of accounting in financial reporting in modern economy</li> <li>2. To develop the understanding of basic accounting concepts and techniques of an accounting system. Principles and procedures underlying the accounting process</li> <li>3. To provide an understanding, importance of accounting; preparation of final accounts for profit making organization</li> </ol>	<p>CO1 Differentiate between various Branches of accounting and Discuss the principles and concepts of accounting and book keeping.</p> <p>CO2 Record the Transactions in Journal and day books and apply rules of Debit and Credit.</p> <p>CO3 Classify and prepare various types of Accounts and summarize them into trial Balance.</p> <p>CO4 Define and list various kinds of Reserves and provisions and Discuss their role in Accounting.</p> <p>CO5 Apply accounting rules in determining financial results and preparation of financial statement</p>
647	BBA 106	Economics –I	<ol style="list-style-type: none"> <li>1. To explain the basics of economics and describe its application in managerial problems.</li> <li>2. To demonstrate the effect of demand and cost on business decisions and make a relation between cost and production.</li> <li>3. To analyze different types of market and explain pricing decisions in the markets.</li> </ol>	<p>CO1 Analyze economic problems and can correlate scarcity with the requirements</p> <p>CO2 Evaluate demand and can analyze cost in order to optimize cost-production combination.</p> <p>CO3 Understand the effects of supply and make a relation between supply and production.</p> <p>CO4 Recognize the existing market and can take appropriate decisions</p> <p>CO5 Analyze different theories of determination of factor prices, rent, interest, wages and profit</p>
648	BBA 107 A	Fundamentals of Logistics	<ol style="list-style-type: none"> <li>1. To develop competencies and knowledge of students to become logistics professionals</li> <li>2. To orient students in the field of Logistics</li> <li>3. To help Students to understand Fundamentals of Logistics</li> </ol>	<p>CO1 Describe need, benefits, principles, cost reduction and Informatics of Logistics.</p> <p>CO2 Explain and classify various elements and phases of Customer services in Logistics.</p> <p>CO3 Describe Global Logistics and Recognize Strategic Issues in Global Analytical Logistics.</p> <p>CO4 Provide details about transportation, warehousing, courier Services and E-commerce.</p> <p>CO5 Describe Supply chain, Cold chain,, Liquid Logistics, Rail Logistics. and EXIM.</p>

## Course Outcomes

S. No.	Course Code	Course Title	Course Objective	Expected Outcome
649	BBA 107 B	Business Ethics	<ol style="list-style-type: none"> <li>1. To understand the elements of ethics and the importance of ethical decision making in business and society.</li> <li>2. To explore the models that supports ethical decision making.</li> <li>3. To know the concept of corporate social responsibility and its role in business.</li> </ol>	CO1 Understand the ethical components for managerial decision making in organization CO2 Apply the knowledge of ethics in managerial decision making CO3 Understand the concept of CSR in business organization CO4 Understand and identify different types of ethical issues prevailing in the organization CO5 Recognize the need & relevance of Indian Ethos in managerial decision making
650	BBA 201	Disaster Management	<ol style="list-style-type: none"> <li>1. To provide adequate theoretical knowledge about disaster management</li> <li>2. To acquaint students with structured skill based management</li> <li>3. To study the emerging approaches in disaster reduction &amp; management</li> </ol>	CO1 Define the concepts of disaster and its impact on people and society and its preventive measures. CO2 Classify and Discuss the cause and effects of Natural disasters. CO3 Classify and Discuss the cause and effects of Manmade disasters CO4 Describe the goals of Disaster Mgmt. Cycle, Do's and Don'ts during disasters, mitigation strategies and elements of Disaster Mgmt. Cycle. CO5 Explain various components of the disaster relief and vulnerability profile of India
651	BBA 202	Business Communication	<ol style="list-style-type: none"> <li>1. To develop language proficiency and vocabulary building.</li> <li>2. To apply theoretical principles into practical use by understanding individual and group dynamics of speech. To identify common communication problems that may be holding learners back</li> <li>3. To identify what their non-verbal messages are communicating to others</li> <li>4. To explore communication beyond language.</li> </ol>	CO1 Adapt effective listening skills CO2 1. Learn and demonstrate effective public Speaking CO3 Learn and demonstrate effective reading skills CO4 2. Know and practice effective writing skills CO5 Understand and recognize the importance of making communication effective

## Course Outcomes

S. No.	Course Code	Course Title	Course Objective	Expected Outcome
652	BBA 203	Computer Applications in Business– II	<ol style="list-style-type: none"> <li>1. To understand the applications of power point presentation and types of slides.</li> <li>2. To acquire the knowledge of MS-Access as a database tool to manage the organization information.</li> </ol>	CO1 Describe the functioning of the Operating Systems in a computer CO2 Demonstrate the skills to develop slides on MS power-point CO3 Explain concept related to basics of Database Management System CO4 Design ERD relation for real life problem solving CO5 Develop ability to work with windows based database software
653	BBA 204	Organizational Behavior	<ol style="list-style-type: none"> <li>1. To understand the basics of organizational behaviour, nature of organizational behavior and its objective</li> <li>2. To explain the impact of different parameters on individuals and the relation between individuals and their environment</li> <li>3. To analyze different types of personality theories, motivational theories and an analysis of individual behavior</li> </ol>	CO1 Know the principal concepts and theories of Organizational Behavior and recognize the individual and group behavior in the organization CO2 1. Describe, analyze and understand personality types, perception and learning process on human behavior. CO3 Understand different motivational theories and analyze motivational strategies used in a variety of organizational settings. CO4 Review and examine the organization system, including structure, culture, human resources and change. CO5 Understand and analyze change in the organizations and apply a proactive and holistic approach toward dealing with employee resistance towards change
654	BBA 205	Cost Accounting	<ol style="list-style-type: none"> <li>1. To understand the basics of cost accounting and understand the Treatments of Costs Under Different Situations</li> <li>2. To understand how methods of costing and types of costing are used together</li> <li>3. To develop expertise on the calculation of cost of production and cost reduction methods.</li> </ol>	CO1 Recognize and classify various Cost concepts and elements of cost to prepare cost sheet for the business entity. CO2 Apply various Inventory control techniques for cost reduction and smooth functioning of business CO3 Apply various labor control Techniques for cost reduction and smooth functioning of business. CO4 Explain meaning of Overheads. Classify, Allocate, Apportion and Reapportion various overheads to calculate cost. CO5 Apply costing methods and costing techniques appropriately as per the nature of business and the requirement of the firm and prepare cost sheets

## Course Outcomes

S. No.	Course Code	Course Title	Course Objective	Expected Outcome
655	BBA 206	Legal Aspects of Business	<ol style="list-style-type: none"> <li>1. To explain the concept of contract, performance of contract and breach of contract.</li> <li>2. To understand the provisions of special contracts and The sale of goods Act.</li> <li>3. To develop understanding of partnership business.</li> </ol>	<p>CO1 Understand the meaning and nature of contract and various essentials of contract.</p> <p>CO2 Understand Discharge of contract and remedies for breach of contract.</p> <p>CO3 Analyze and differentiate between bailment, Pledge and Agency.</p> <p>CO4 Understand the idea of sale, distinguish sale and agreement to sell and can explain conditions and warranties</p> <p>CO5 Interpret critical issues of partnership business and can recognize rights and duties of partners.</p>
656	BBA 207 A	Business Environment	<ol style="list-style-type: none"> <li>1. To understand the different environment in the business climate.</li> <li>2. To familiarize the students about minor and major factors affecting the business in various streams.</li> <li>3. To know the different environment like, political, technological and economic environment in the business.</li> </ol>	<p>CO1 Recognise the competitive structure of the industry</p> <p>CO2 Decide the major factors which affect the business</p> <p>CO3 Describe the nature and structure of economy</p> <p>CO4 Recognise the social responsibilities of business</p> <p>CO5 Assess the impact of demographics on business</p>
657	BBA 207 B	Financial Services	<ol style="list-style-type: none"> <li>1. To familiarize the students with the financial services industry as the growing phenomenon of Liberalization, Privatizations and Globalizations.</li> <li>2. To impart knowledge about Indian financial system and Indian financial market and its assets.</li> <li>3. To develop knowledge about new and innovative financial services introduced in recent years.</li> </ol>	<p>CO1 Understand the functioning of the financial system &amp; Financial services.</p> <p>CO2 Apply critical, analytical and integrative thinking while understanding the functioning for the Leasing</p> <p>CO3 Apply critical, analytical and integrative thinking while understanding the functioning for Hire purchase</p> <p>CO4 Apply critical, analytical and integrative thinking while understanding the functioning for the Venture capital services</p> <p>CO5 Apply critical, analytical and integrative thinking while understanding the functioning for the Mutual Funds</p>

## Course Outcomes

S. No.	Course Code	Course Title	Course Objective	Expected Outcome
658	BBA 301	Principles of Marketing	<ol style="list-style-type: none"> <li>1. To understand the nature and significance of the Marketing Function and the Marketing management process.</li> <li>2. To gain knowledge about the key aspects of the Buying Behavior of consumers and develop an understanding of the STP Process.</li> <li>3. To explain the factors affecting various product, pricing, channel management and Marketing communication decisions.</li> </ol>	CO1 List the core concepts of marketing and the goals of the Marketing function CO2 Determine the buying behavior of a given target market segment CO3 Identify and evaluate target segments CO4 Determine product and pricing policy CO5 Summarize the nature and functions of distribution channels
659	BBA 302	Statistical Methods for Business	<ol style="list-style-type: none"> <li>1. To understand the importance of data and how to collect, organize and summarize those data.</li> <li>2. To describe preliminary statistical techniques to solve problems and impart the knowledge of interpreting the result of data analysis.</li> <li>3. To enable the students in terms of understanding the statistical aspects related to business thereby enhancing their skills in this regard.</li> </ol>	CO1 Describe the need for data analysis and formulate the statistical problem and solve it. CO2 Define basic statistical tools which are useful for managerial decision making. CO3 Calculate and Interpret the results of statistical analysis for improved managerial decision making CO4 Compare magnitudes of aggregates of related variables CO5 Determine and report the relationship between the variables.
660	BBA 303	Management Accounting	<ol style="list-style-type: none"> <li>1. To develop an understanding about the scope of financial accounting with understanding the concept of profit maximization in changing and complex business world</li> <li>2. To provide an understanding, importance of different cost control Technique.</li> <li>3. To give knowledge about the analysis of changes in financial position of corporate entity and develop capabilities in solving complex managerial problems as a business manager</li> </ol>	CO1 Understand concepts of Management accounting and differentiate between various types of Accounting. CO2 Compare common size and comparative financial statements of different periods. Analyze financial statements and different ratios for decision making. CO3 Discuss importance and limitation of Fund flow and Cash Flow statements and create them for accounting purpose. CO4 Apply Standard costing technique for controlling cost. CO5 Describe and Analyze relationships between cost, volume and profit for achieving breakeven point and profit maximization.

## Course Outcomes

S. No.	Course Code	Course Title	Course Objective	Expected Outcome
661	BBA 304	Economics -II	<ol style="list-style-type: none"> <li>1. To impart knowledge about Indian financial system and Indian financial market and its assets</li> <li>2. To develop knowledge Money market and its players and instruments along with legal framework of Indian financial system</li> <li>3. To introduce organizational structure of RBI and Monetary Policy</li> </ol>	<p>CO1 Analyze the macroeconomic concepts &amp; their relation to micro economic concept &amp; its affect on the business &amp; economy.</p> <p>CO2 Understand the concept of poverty, and Unemployment, evaluate &amp; analyze these concepts and apply them in various changing situations in industry. Students would be able to apply various techniques of economics for better utilization of resources.</p> <p>CO3 Understand the issues in economic development and able to analyze the effect of infrastructure and economic policies on the economic development of a country.</p> <p>CO4 Understand the concept of international trade and able to analyze its impact on the growth of a country</p> <p>CO5 Understand &amp; evaluate the New Economic Policies of Liberalisation, Globalisation and related issues.</p>
662	BBA305	Corporate Law I	<ol style="list-style-type: none"> <li>1. To understand the management and working of directors in companies.</li> <li>2. To know the procedure of conducting various meeting of shareholders and directors.</li> <li>3. To know the prevention of oppression and mismanagement in companies and restructuring of companies.</li> </ol>	<p>CO1 Understand the meaning and nature of company</p> <p>CO2 Discuss the procedure of formation of companies.</p> <p>CO3 Understand various important documents of company.</p> <p>CO4 Analyze the working of management of companies.</p> <p>CO5 Evaluating various methods capital formation of company</p>
663	BBA 306 A	Productions & Materials Management	<ol style="list-style-type: none"> <li>1. To understand appropriate decision making concepts about facility location and facility layout.</li> <li>2. To understand concepts of basic functions of purchase, store, inventory control etc</li> <li>3. To explore and understand the knowledge of production planning and control.</li> </ol>	<p>CO1 Apply production and material management concepts in manufacturing and service industry.</p> <p>CO2 Apply and implement the knowledge of different Store and location decisions in real life situations.</p> <p>CO3 Analyze different layouts and stock verification techniques in practical situations of manufacturing industry.</p> <p>CO4 Adapt various quality measures and Compute inventory control techniques in manufacturing industry.</p> <p>CO5 Analyze and apply skills in operations function to improve plant maintenance.</p>

## Course Outcomes

S. No.	Course Code	Course Title	Course Objective	Expected Outcome
664	BBA 306 B	Financial Audit	<ol style="list-style-type: none"> <li>1. To identify business transaction related to book-keeping, accountancy and audit.</li> <li>2. To understand the planning and procedure of audit program.</li> <li>3. To learn the methods of verification and preparation of audit report.</li> </ol>	<p>CO1 Understand the theoretical concept and differences between book keeping, accountancy and audit.</p> <p>CO2 Describe Audit program and understand theoretical concepts of Vouchers, receipts and payments.</p> <p>CO3 Discuss details regarding Verification, Depreciation, provisions, reserves and valuation of inventories.</p> <p>CO4 Compute audit report of a business organization.</p> <p>CO5 Understand the nature, objectives and importance of investigation in audit.</p>
665	BBA 401	Financial Management	<ol style="list-style-type: none"> <li>1. To develop an understanding about the scope of financial management with understanding the concept of wealth maximization in modern fast changing complex business world</li> <li>2. To give knowledge about the analysis of changes in financial position of corporate entity and develop capabilities in solving complex managerial problems as a business manager</li> <li>3. To impart knowledge on capital budgeting decision making with a basic concept of different techniques to appraise business projects</li> </ol>	<p>CO1 Analyze and evaluate the financial system and financial environment of the organization</p> <p>CO2 Assess the capital structure of the organization and evaluate the profitability condition</p> <p>CO3 Apply the techniques of capital budgeting for selecting best investment opportunities</p> <p>CO4 Understand the basic concept and importance of Management of Current Assets in an organisation</p> <p>CO5 Apply the concept of working capital management in the organization</p>
666	BBA 402	Corporate Accounting	<ol style="list-style-type: none"> <li>1. To understand the concept and role of accounting in financial reporting in modern economy</li> <li>2. To develop the understanding of basic accounting concepts and techniques of an accounting system. Principles and procedures underlying the accounting process</li> <li>3. The primary objective of the course is to familiarize the students with the basic technique of preparing and presenting the corporate accounts for user of accounting information</li> </ol>	<p>CO1 Differentiate between various Branches of accounting and Discuss the principles and concepts of accounting and book keeping.</p> <p>CO2 Record the Transactions of Issue of Shares and Debentures of companies</p> <p>CO3 Apply accounting rules in determining financial results and preparation of financial statement of Companies</p> <p>CO4 Define and explain valuation of goodwill and shares</p> <p>CO5 Understand Internal Reconstruction &amp; Liquidation of Companies</p>

## Course Outcomes

S. No.	Course Code	Course Title	Course Objective	Expected Outcome
667	BBA 403	Business Research Methods	<ol style="list-style-type: none"> <li>1. Develop an understanding of Role of Business Research, Process of Research and types of research.</li> <li>2. Explain the mechanism for defining the Research problems and develop Research proposals.</li> <li>3. Develop an understanding of merits and limitations of various research designs, types of data and methods of data collection..</li> </ol>	<p>CO1 Gain the Knowledge &amp; understanding of concept / fundamentals for different types of research.</p> <p>CO2 Applying relevant research techniques.</p> <p>CO3 Evaluating relevant data collection techniques and displaying of data collected</p> <p>CO4 Classifying different techniques of sampling and Evaluating statistical analysis which includes t test, z test, ANOVA technique in doing research.</p> <p>CO5 Applying Interpretation and prepare research report.</p>
668	BBA 404	Banking & Insurance	<ol style="list-style-type: none"> <li>1. To understand functions of commercial banks in modern banking environment including diverse areas of Indian banking.</li> <li>2. To develop knowledge about country's central banking system with special reference to Reserve Bank of India and to understand the banker customer relationship.</li> <li>3. To gain knowledge of concept and role of insurance in economic development of the country.</li> </ol>	<p>CO1 Understand the concept of Indian banking system and its recent trends</p> <p>CO2 Understand the functioning of Reserve Bank of India and overall working of commercial bank of India</p> <p>CO3 Analyze the role of insurance in economic development</p> <p>CO4 Analyzing the dimensions of banker customer relationships</p> <p>CO5 Identify the concept and need of Life insurance and General insurance</p>
669	BBA 405	Corporate Law –II	<ol style="list-style-type: none"> <li>1. To understand the management and working of directors in companies.</li> <li>2. To know the procedure of conducting various meeting of shareholders and directors.</li> <li>3. To know the prevention of oppression and mismanagement in companies and restructuring of companies.</li> </ol>	<p>CO1 Understand the meaning and nature of company</p> <p>CO2 Discuss the procedure of formation of companies.</p> <p>CO3 Understand various important documents of company.</p> <p>CO4 Analyze the working of management of companies.</p> <p>CO5 Evaluating various methods and reasons of winding up of companies.</p>

## Course Outcomes

S. No.	Course Code	Course Title	Course Objective	Expected Outcome
670	BBA 406 A	Human Resource Management	<ol style="list-style-type: none"> <li>1. To equip the students with knowledge, skills and competencies required to manage people.</li> <li>2. To acquaint the students with various functions and processes related to human resource management.</li> <li>3. To provide conceptual framework required for human resource planning and development.</li> </ol>	<p>CO1 Understands theoretical concepts and framework required for effective Human Resource Management and Explain an overview on various functions and processes of human resource management</p> <p>CO2 Understand theoretical concepts of Human Resource planning and identify the human resource needs of an organization and plan accordingly for procurement of Human Resource.</p> <p>CO3 Define &amp; Discuss Training needs for employees and apply suitable training methods to fulfil those needs.</p> <p>CO4 Discuss &amp; Use various Performance appraisal and Employ counselling techniques in organization for development of employees.</p> <p>CO5 Explain various components of employee remuneration and list employee welfare, social security, health and safety measures.</p>
671	BBA 406 B	International Marketing	<ol style="list-style-type: none"> <li>1. To possess the theoretical concepts of international Marketing and be acquainted with trade barriers of international markets.</li> <li>2. To understand the impact of cultural, political and legal differences on the product and the company.</li> <li>3. To understand different forms of international marketing and know about the international distribution.</li> </ol>	<p>CO1 Understand and describe the basic concepts and environment of international marketing.</p> <p>CO2 Analyze opportunities of international trading and choose the suitable international markets for their organization.</p> <p>CO3 Understand product life cycle and various pricing strategies.</p> <p>CO4 Describe channel management and selection</p> <p>CO5 Differentiate and know the different entry modes.</p>
672	BBA 501	E- Commerce	<ol style="list-style-type: none"> <li>1. To make a student familiar with the mechanism of conducting business transactions through electronic media. &amp; understand the e-commerce scenario in India.</li> <li>2. To provide adequate knowledge and understanding about E-Commerce practices to the students</li> <li>3. To expose students to technology in online commercial operations</li> </ol>	<p>CO1 List the features , functions and common practices of e-Commerce</p> <p>CO2 Decide the advantages and disadvantages of various e-Commerce models</p> <p>CO3 List the infrastructure requirements of e-Commerce</p> <p>CO4 Decide areas of application of e-Commerce</p> <p>CO5 Identify the contemporary issues arising in the field of E-Commerce</p>

## Course Outcomes

S. No.	Course Code	Course Title	Course Objective	Expected Outcome
673	BBA 502	Financial Institutions and Markets	<ol style="list-style-type: none"> <li>1. To impart knowledge about Indian financial system and Indian financial market and its assets.</li> <li>2. To develop knowledge of Money market, its players , instruments and its regulation in Indian financial system</li> <li>3. To develop knowledge of Capital market, its players, instruments and its regulation in Indian financial system</li> </ol>	<p>CO1 Develop an understanding of the functioning of the financial system in India, its constituents namely, the institutions, markets, instruments, services and intermediaries.</p> <p>CO2 Develop a critical, analytical and integrative thinking while understanding the functioning of Money Markets</p> <p>CO3 Develop a critical, analytical and integrative thinking while understanding the functioning of Capital Markets Primary and Secondary included)</p> <p>CO4 Develop a critical, analytical and integrative thinking while understanding the functioning of important Financial Institutions in India</p> <p>CO5 Develop a critical, analytical and integrative thinking of the role played by the regulators in the smooth functioning of the</p>
674	BBA 503	Management of Small Scale Industries	<ol style="list-style-type: none"> <li>1. To enable the students to understand various aspects in the managements of small scale industrial units.</li> <li>2. To simulate the real life activities of entrepreneurs in the startup age of a new venture.</li> <li>3. To provide the skills to start and build enterprise successfully</li> </ol>	<p>CO1 List the Govt policies and development of small scale sector in India</p> <p>CO2 List the characteristics of a successful Entrepreneur; &amp; Design business plan</p> <p>CO3 Institution supporting small business enterprises</p> <p>CO4 Identify the areas of Production management</p> <p>CO5 Identify the Importance and functions of HRM in SSIs</p>
675	BBA 504	Corporate Governance	<ol style="list-style-type: none"> <li>1. To enable the students to grasp the law and ethics underlying and governing the structure and operation of the business corporation</li> <li>2. To enable the students to understand the parameters of accountability, control and reporting system by the corporate board</li> <li>3. To help the students to have an insight into the interactive relationship among various corporate and related constituents in determining directions and performance of business organizations</li> </ol>	<p>CO1 List the role and importance of corporate governance</p> <p>CO2 Recognize the need for business ethics and role of business in the society</p> <p>CO3 Summarize the role and responsibilities of board members as well as the future of corporate governance in India</p> <p>CO4 Differentiate the types of different types directors</p> <p>CO5 Determine the scope of corporate social responsibility</p>

## Course Outcomes

S. No.	Course Code	Course Title	Course Objective	Expected Outcome
676	BBA 505	Quantitative Techniques for Management	<ol style="list-style-type: none"> <li>1. To give understanding of Linear equations and Linear Programming.</li> <li>2. To develop the understanding of specially structured Programming like transportation and Assignment.</li> <li>3. To describe the basic concept of Decision making under uncertainty and in a competitive situation.</li> </ol>	<p>CO1 Recognize the source of a quantifiable problem, solve the issues involved and produce an appropriate action plan.</p> <p>CO2 Solve the equations related to Linear programming</p> <p>CO3 Observe and compute the specially structured programming of transportation and assignment problems.</p> <p>CO4 Recognise and analyse strategic situations and represent them as games</p> <p>CO5 Analyze the decision making problems under uncertainty and competitive situations.</p>
677	BBA 506	Summer Project	<p>Summer Project is expected provide students with an opportunity to apply their class room learning to a real life business situation. The students are required to submit a final report in the specific format detailing their learning in the organisation in addition to appraising their academic mentor of the weekly progress.</p>	<p>CO1 Prepare comprehensive report based on literature survey</p> <p>CO2 Use theoretical concept in real life situation.</p> <p>CO3 Solve problems through simulation or through practical work</p> <p>CO4 Show results from the work comprehensively through presentation</p> <p>CO5 Demonstrate his/her work in a conference or publish the work in a peer reviewed journal</p>
678	BBA 507 A	Elements of Taxes	<ol style="list-style-type: none"> <li>1. To acquaint the students with basic principles underlying the provisions of direct tax laws</li> <li>2. To develop a broad understanding of tax practices.</li> <li>3. To provide students with a working knowledge of the fundamental tax principles and rules that applies by individuals.</li> </ol>	<p>CO1 Calculate income from salary</p> <p>CO2 Analyze and compute income from house property and Business &amp; Profession.</p> <p>CO3 Understand exemptions of capital gains and incomes of other sources.</p> <p>CO4 Calculate the incomes to be clubbed in the incomes of transferor.</p> <p>CO5 Calculate taxable income and tax liability of assessee.</p>
679	BBA 507 B	Business Budgeting	<ol style="list-style-type: none"> <li>1. To develop a basic knowledge about the meaning, types and preparations of budgets in various functional areas of business.</li> <li>2. To analyze the basic characteristics and stages of project planning.</li> <li>3. To know the meaning, features and theories of business forecasting and its importance in business.</li> </ol>	<p>CO1 Describe various concepts of Budgeting</p> <p>CO2 Describe Different Types of Budgets</p> <p>CO3 Draft the budget of different functional area of business.</p> <p>CO4 Know the importance of business forecasting in current scenario.</p> <p>CO5 Understand the various stages of project planning and also the methods of estimating capital outlay</p>

## Course Outcomes

S. No.	Course Code	Course Title	Course Objective	Expected Outcome
680	BBA 601	Rural Marketing	<ol style="list-style-type: none"> <li>1. To understand the nature and significance of Rural marketing and its process.</li> <li>2. To understand the lifestyle and behavior of rural people for successful decision making.</li> <li>3. To explain the factors affecting various product, price, place, promotion decision in rural areas.</li> </ol>	<p>CO1 Discuss conceptual framework of rural marketing for proper segmentation of rural markets.</p> <p>CO2 Explain the rural environment factors and Define appropriate strategies for rural marketing.</p> <p>CO3 Define &amp; Discuss suitable CSR Activities for proper development of rural areas.</p> <p>CO4 Use suitable Product, Price, Promotion and Distribution strategies for rural markets.</p> <p>CO5 Describe role of rural &amp; cooperative banks and Importance of Micro finance Schemes in rural development.</p>
681	BBA 602	Project Planning and Control	<ol style="list-style-type: none"> <li>1. Define the roles of the project manager, functional manager, and executives in a project management environment</li> <li>2. To provide a valuable insight to students in the area to understand formulation of corporate investment strategies, prepare feasibility reports and projects.</li> <li>3. To understand the financial appraisal of project and become aware of the scheduling and execution of projects</li> </ol>	<p>CO1 Understand basics of project life cycle and differentiate between various projects.</p> <p>CO2 Define the goals and objective of a project and analyse a projects feasibility from technical, market and financial perspective.</p> <p>CO3 Understand complex projects using appropriate planning tools.</p> <p>CO4 Review and evaluate a project and decide whether to carry the project or not.</p> <p>CO5 Demonstrate team work effectively with diverse task groups.</p>
682	BBA 603	Entrepreneurship Development	<ol style="list-style-type: none"> <li>1. To simulate the real life activities of entrepreneurs in the startup age of a new venture.</li> <li>2. To provide the skills to start and build enterprise, implement it successfully</li> <li>3. To inculcate skills to manage the transition of a start up to a full fledged business entity.</li> </ol>	<p>CO1 List the characteristics of an entrepreneur, entrepreneur as well their role in the economic development of the country.</p> <p>CO2 Design business plan</p> <p>CO3 Determine the entry barriers to the industry</p> <p>CO4 Identify stages of growth in entrepreneurial ventures</p> <p>CO5 Identify the factors influencing rise of Women &amp; minority entrepreneurs, International entrepreneurship, Rural Entrepreneurship, Social Entrepreneurship</p>

## Course Outcomes

S. No.	Course Code	Course Title	Course Objective	Expected Outcome
683	BBA 604	Business Policies and Strategies	<ol style="list-style-type: none"> <li>1. To understand the basic concept and nature of strategic decision making.</li> <li>2. To analyze different types of strategies and integration of strategic plans with business plans.</li> <li>3. To familiarize among students the concept of strategic analysis, its alternative strategies and implementation concepts</li> </ol>	CO1 Understand the basic concept of business strategy CO2 Illustrate the strategic requirements and correlation between business plans with strategic plans CO3 Identify and evaluate different alternative strategies for effective decision making CO4 Analyze strategy implementation alternatives for effective decision making CO5 Understand the internal and external environment of business
684	BBA 605	Industrial Law	<ol style="list-style-type: none"> <li>1. To Understand and focus on wage policies, compensation for accidents caused during the course of employment.</li> <li>2. To understand working conditions of employees and various aspect of management of labor relation and dispute settlement bodies and techniques.</li> </ol>	CO1 Summarize the statute for management and functioning of a manufacturing facility in India CO2 Apply aspects of employment law to real workplace situations CO3 Develop ability to critically analyze and manage union related strategies CO4 Critically evaluate statute regarding compensation and emerging trends CO5 Consider the ethical, equity and sustainability implications of current and emerging labour regulations regarding dispute resolution
685	BBA 606	Comprehensive Viva Voce	<p>The objective of comprehensive viva-voce is to assess the overall knowledge of the student in the relevant field of Management acquired over 3 years of study in the undergraduate program.</p>	CO1 Demonstrate capabilities to face interview both in the academic and the industrial sector. CO2 Show Oral Presentation skills by answering questions in precise and concise manner.
686	BBA 607 A	Export Import Procedure and Documentation	<ol style="list-style-type: none"> <li>1. To familiarize students with the process of international customs clearance operations.</li> <li>2. To form a base of policy framework in International Business with special emphasis on Indian Customs.</li> <li>3. To apprise them of the documentation procedures and its sanctity in Int'l' Business.</li> </ol>	CO1 Understand and Describe the pre-requisites and perks of foreign trade (IMPEX) CO2 List and describe the export promotion schemes by Govt. of India CO3 Analyze issues related with import management CO4 Summarize and apply the clauses of import Licensing policy and custom clearance procedure CO5 Interpret the export-import policy and the working for the support agencies for the same

## Course Outcomes

S. No.	Course Code	Course Title	Course Objective	Expected Outcome
687	BBA 607 B	Cost & Management Audit	<ol style="list-style-type: none"> <li>1. To give understanding of cost audit and procedure of valuation and verification of inventories,</li> <li>2. To give information about professional ethics and code of conduct of cost auditor.</li> <li>3. To provide students with a working knowledge of Management Audit and its policies.</li> </ol>	<p>CO1 Describe the procedure involved in cost audit of inventories.</p> <p>CO2 Understand &amp; Recognize the ethical values and code of conduct of cost auditor.</p> <p>CO3 Preparation of Cost Audit Report</p> <p>CO4 Describe the procedure involved in Management audit of inventories.</p> <p>CO5 Review of Various Policies</p>
688	BSC101	English	<ul style="list-style-type: none"> <li>• To identify common communication problems that may be holding learners back.</li> <li>• To identify what their non-verbal messages are communicating to others.</li> <li>• To understand role of communication in teaching-learning process.</li> <li>• To learn to communicate through the digital media.</li> <li>• To understand the importance of empathetic listening.</li> <li>• To explore communication beyond language.</li> </ul>	<p>CO1. Understanding 'Listening' in a prolific manner. Improvlistening,observational skills and problems solving capabilities. Grasp the importance and meaning marvelously.</p> <p>CO2. Improve the fluency in spoken English. Enhance communication skills through grammar vocabulary with emphasis on skills.</p> <p>CO3. Develop communication skill through various language learning activities.</p> <p>CO4. Learn an ability to put ideas in a proper sequence. Build the language proficiency of the students in English with emphasis on English.</p> <p>CO5. Show an understanding of opportunities in the field of communication,Use current technology related to the communication field.</p> <p>CO6. Learn to use social media,websites effectively to enhance knowledge gracefully.</p> <p>CO7. Learn to utilise communication skills finely by non-verbal method.</p>

## Course Outcomes

S. No.	Course Code	Course Title	Course Objective	Expected Outcome
689	BSC102	Mechanics	<ul style="list-style-type: none"> <li>• This course reviews the concepts of mechanics learnt at school from a more advanced perspective and goes on to build new concepts.</li> <li>• It begins with Newton's Laws of Motion and ends with the Fictitious Forces and Special Theory of Relativity.</li> <li>• Students will also appreciate the Rotational Motion, Gravitation and Oscillations.</li> <li>• The students will be able to apply the concepts learnt to several real world problems.</li> </ul>	<p>CO1: Understand the role of vectors and coordinate systems in Physics.</p> <p>CO2: Learn the concept of inertial reference frames their transformations.</p> <p>CO3: Explain the phenomena of simple harmonic motion and the properties of systems executing such motions.</p> <p>CO4: Describe how fictitious forces arise in a non-inertial frame.</p> <p>CO5: Describe special relativistic effects and their effects on the mass and energy of a moving object.</p>
690	BSE103	Atomic Structure, Bonding, General Organic Chemistry & Aliphatic Hydrocarbons	<ul style="list-style-type: none"> <li>• The course aims at making the students understand the atomic structure and behavior, interactions between matter and energy at both the atomic and molecular level.</li> <li>• The students are taught to chemical bonding and molecular structure.</li> <li>• To impart the knowledge of Stereochemistry</li> <li>• To expose students to fundamentals of organic chemistry.</li> <li>• Students are also expected to learn the physical and chemical properties of Aliphatic Hydrocarbons.</li> </ul>	<p>CO1: Understand atomic structure and behaviour, interactions between matter and energy at both the atomic and molecular level.</p> <p>CO2: Understand chemical bonding and molecular structure.</p> <p>CO3: Learn Stereochemistry</p> <p>CO4: Understand fundamentals of organic chemistry.</p> <p>CO5: Understand the physical and chemical properties of Aliphatic Hydrocarbons.</p>
691	BSC104	Differential Calculus	<p>The objective of this course is to expose student to understand the basic concepts of differential calculus like limit, continuity, differentiability of functions, Curvature, Asymptotes and tracing of curves, mean value theorems, partial differentiation of multi variable functions.</p>	<p>CO1: To Calculate the limit and examine the continuity and differentiability of a function at a point,</p> <p>CO2: To find tangents, normals and asymptotes of a curve and to calculate curvature</p> <p>CO3: To trace the curves</p> <p>CO4 To Understand the consequences of various mean value theorems for differentiable functions</p> <p>CO5 To Apply tests in optimization value of a function appearing in physical sciences, life sciences.</p>

## Course Outcomes

S. No.	Course Code	Course Title	Course Objective	Expected Outcome
692	BSC105	Mechanics Lab	<ul style="list-style-type: none"><li>• This course reviews the concepts of mechanics learnt at school from a more advanced perspective and goes on to build new concepts experimentally.</li><li>• To understand use of basic measuring instruments such as using vernier caliper, screw gauge and travelling microscope.</li><li>• Students will also appreciate the concept of Moment of Inertia.</li><li>• The students will be able to apply the concepts learnt to several real world problems.</li></ul>	CO1: Understand the use of vernier calliper, screw gauge and travelling microscope. CO2: Learn the concept of Moment of Inertia. CO3: Understand use of Pendulums. CO4: Understand the physical meaning of 'g'. CO5: Knowledge of how to handle measuring instruments.
693	BSC106	Atomic Structure, Bonding, General Organic Chemistry & Aliphatic Hydrocarbons Lab	<ul style="list-style-type: none"><li>• To experimental practice of quantitative volumetric analysis.</li><li>• To understand the separation techniques.</li></ul>	CO1: Understand and apply the quantitative volumetric analysis. CO2: Understand and analyze the separation techniques. CO3: Identify and separate different molecules from the mixture

## Course Outcomes

S. No.	Course Code	Course Title	Course Objective	Expected Outcome
694	BSC201	Environmental Science	<p>The Environmental Science major prepares students for careers as leaders in understanding and addressing complex environmental issues from a problem-oriented, interdisciplinary perspective and Apply systems concepts and methodologies to analyze and understand interactions between social and environmental processes.</p>	<p>CO1: Appreciate concepts and methods from ecological and physical sciences and their application in environmental problem solving. Ecosystem Links between environmental components and their role, types, values and conservation of biodiversity.</p> <p>CO2: Concept of non-Conventional energy resources, types and various applications of renewable resources and current potentials of energy resources.</p> <p>CO3: Basic Structure of atmosphere and their functions Current problems related issues Students will apply knowledge of the sciences within an interdisciplinary context in solving environmental issues such as environmental health, food and agriculture, energy, waste and pollution, climate change, disaster management.</p> <p>CO4: Composition of solid waste, sources of generation, collection and disposal methods of solid waste, recycling, reuse of wastes.</p> <p>CO5: Sustainable development, urban problems related to energy, Water conservation, and Rain water harvesting water shed management, Resettlement and rehabilitation, Public awareness and Environmental Education, various environmental Acts.</p>
695	BSC202	Electricity, Magnetism and EMT	<ul style="list-style-type: none"> <li>• This course reviews the concepts of electromagnetism learnt at school from a more advanced perspective and goes on to build new concepts.</li> <li>• The course covers static and dynamic electric and magnetic fields, and the principles of electromagnetic induction.</li> <li>• It also includes analysis of electrical circuits and introduction of network theorems.</li> <li>• The students will be able to apply the concepts learnt to several real world problems.</li> </ul>	<p>CO1: Explain and differentiate the vector and scalar formalisms of electrostatics.</p> <p>CO2: Apply Gauss's law of electrostatics to solve a variety of problems.</p> <p>CO3: Describe how magnetism is produced and list examples where its effects are observed.</p> <p>CO4: Describe the magnetic field produced by magnetic dipoles and electric currents.</p> <p>CO5: Explain Faraday-Lenz and Maxwell laws to articulate the relationship between electric and magnetic fields.</p>

## Course Outcomes

S. No.	Course Code	Course Title	Course Objective	Expected Outcome
696	BSC203	Chemical Energetic, Equilibria & Functional Group Organic Chemistry-I	<ul style="list-style-type: none"> <li>• To impart the basic knowledge of chemical energetics and chemical equilibrium.</li> <li>• To learn about ionic equilibria.</li> <li>• Students are also expected to learn the synthesis, physical and chemical properties of aromatic hydrocarbons.</li> <li>• To develop understand about synthesis, physical and chemical properties of alcohols, phenols and ethers.</li> <li>• To learn the synthesis, physical and chemical properties of aldehydes and ketones.</li> </ul>	CO1: Understand the chemical energetics and chemical equilibrium. CO2: Understand ionic equilibria. CO3: Understand the synthesis of aromatic hydrocarbons with their physical and chemical properties. CO4: Understand the synthesis, physical and chemical properties of alcohols, phenols and ethers. CO5: Understand the synthesis, physical and chemical properties of aldehydes & ketones.
697	BSC204	Differential Equations	<p>The objective of this course is to expose student to understand the basic concepts and solution methodologies of differential Equations and partial differential equations of various orders and degrees, classification of differential equations and partial differential equations and their applications in the field of science and engineering and technology.</p>	CO1: Understand the genesis of ordinary differential equations. CO2: Learn various techniques of getting exact solutions of solvable first order differentialequations and linear differential equations of higher order. CO3: Know Charpit's method to find the solutions of Partial differential equations CO4: Grasp the concept of a general solution of a linear differential equation of an arbitraryorder and also learn a few methods to obtain the general solution of such equations. CO5: Formulate mathematical models in the form of ordinaryand partial differential equationstosuggest possible solutions of the day to day problems arising in physical, chemical and biological disciplines.
698	BSC205	Electricity, Magnetism and EMT Lab	<ul style="list-style-type: none"> <li>• This course reviews the concepts of electromagnetism learnt at school from a more advanced perspective and goes on to build new concepts practically.</li> <li>• To understand the concept of electrical devices.</li> <li>• It also includes analysis of electrical circuits.</li> <li>• Introduction of network theorems.</li> <li>• The students will be able to apply the concepts learnt to several real world problems.</li> </ul>	CO1: Explain the working of Galvanometer. CO2: Apply Gauss's law of electrostatics to solve a variety of problems. CO3: Describe how magnetism is produced and list examples where its effects are observed. CO4: Describe the magnetic field produced by magnetic dipoles and electric currents. CO5: The student will get an opportunity to verify all theorems elaborated above.

## Course Outcomes

S. No.	Course Code	Course Title	Course Objective	Expected Outcome
699	BSC206	Chemical Energetics, Equilibria & Functional Organic Chemistry-I Lab	<ul style="list-style-type: none"> <li>• To understand the experiments related to thermochemistry so that students can learn through experiments.</li> <li>• To understand the experiments related to Ionic equilibria.</li> <li>• To get the skills of purification and synthesis of some chemical compounds.</li> </ul>	<p>CO1: Understand and apply the concepts of thermochemistry by experiments.</p> <p>CO2: Understand and apply the concepts of Ionic equilibria.</p> <p>CO3: Get the skills of purification and synthesis of some chemical compounds.</p>
700	BSC301	Thermal Physics and Statistical Mechanics	<ul style="list-style-type: none"> <li>• This course will introduce Thermodynamics, Kinetic theory of gases and Statistical Mechanics to the students.</li> <li>• The primary goal is to understand the fundamental laws of thermodynamics and its applications to various thermodynamical systems and processes.</li> <li>• This coursework will also enable the students to understand the connection between the macroscopic observations of physical systems and microscopic behavior of atoms and molecules through Statistical mechanics.</li> </ul>	<p>CO1: Learn the basic concepts of thermodynamics and concept of entropy.</p> <p>CO2: Learn the basic concepts of the thermodynamic potentials and their physical interpretations.</p> <p>CO3: Knowledge of the real gas equations, Van der Waal equation of state, the Joule-Thompson effect.</p> <p>CO4: Learn about the black body radiations, Stefan-Boltzmann's law, Rayleigh-Jean's law and Planck's law and their significances.</p> <p>CO5: Learn the quantum statistical distributions, viz., B-E statistics and F-D statistics.</p>
701	BSC302	Solutions, Phase Equilibria, Conductance, Electrochemistry & Functional Group Organic Chemistry-II	<ul style="list-style-type: none"> <li>• To impart an insight into the basic principles of solution, phase equilibrium and properties of ideal and non-ideal solutions.</li> <li>• To understand the basic concepts of conductance and electrochemistry and their applications.</li> <li>• To understand the synthesis, physical and chemical properties of carboxylic acid and their derivatives.</li> <li>• To learn the synthesis, physical and chemical properties of amines and diazonium salts</li> <li>• To learn the synthesis, physical and chemical properties of amino acids, peptides &amp; proteins and serve the knowledge about carbohydrates.</li> </ul>	<p>CO1: Acquire the knowledge of solution and phase equilibrium.</p> <p>CO2: Understand the basic concepts of conductance and electrochemistry and their applications.</p> <p>CO3: Understand the synthesis process of carboxylic acid with their physical and chemical properties.</p> <p>CO4: Become skilled at the synthesis of amines and diazonium salts with their physical and chemical properties.</p> <p>CO5: Learn the synthesis process of amino acids, peptides, proteins and carbohydrates with their physical and chemical properties.</p>

## Course Outcomes

S. No.	Course Code	Course Title	Course Objective	Expected Outcome
702	BSC303	Real Analysis	The objective of this course is to expose student to understand the basic concepts of Real Analysis like countable and uncountable sets. Real line properties, bounds of set and functions, Convergence of sequence and series, Riemann integration, Uniform convergence of sequence and series of functions.	CO1: Understand many properties of the real line and learn to define sequence in terms of functions from a subset of . CO2: Recognize bounded, convergent, divergent, Cauchy and monotonic sequences and to calculate their limit superior, limit inferior, and the limit of a bounded sequence. CO3: Apply the ratio, root, alternating series and limit comparison tests for convergence and absolute convergence of an infinite series of real numbers. CO4: Learn some of the properties of Riemann integrable functions, and the applications of the fundamental theorems of integration.
703	BSC304A	Analytical Geometry	The objective of this course is to expose student to understand the basic concepts of Analytical Geometry of three dimensions in special reference to Line, Plane, Cone, Sphere, Cylinder and Classification of quadratic equations.	CO1: Explain the properties of three dimensional shapes. CO2: Knowledge of direction cosines CO3: Techniques for sketching parabola, ellipse and hyperbola CO4: Classification of quadratic equations representing lines, parabola, ellipse and hyperbola
704	BSC304B	Integral Calculus and Applied Mathematics	The objective of this course is to expose student to understand the basic concepts of Integral Calculus and Applied Mathematics like to find the length of the curve, area, volume using double and triple integration, and give the knowledge of Interpolation techniques, Numerical methods to find the solution of algebraic and transcendental equations and to familiarize with the LPP .	CO1: Know to find the length of the curve, area, volume using double and triple integration, CO2: Provide Numerical methods to find the solution of algebraic and transcendental equations CO3: give the knowledge of Interpolation techniques CO4: Analyze and solve linear programming models of real life situations. Provide graphical solutions of linear programming problems with two variables, Understand the theory of the simplex method. CO5: Know about the Transportation Problem, Assignment Problem.

## Course Outcomes

S. No.	Course Code	Course Title	Course Objective	Expected Outcome
705	BSC304C	Physics work shop skills	<ul style="list-style-type: none"> <li>• The aim of this course is to enable the students to be familiar and have experience of various mechanical and electrical tools through hands-on mode.</li> <li>• This course enables students to understand working of various measuring devices and different type of errors encountered in the measurement process.</li> <li>• This course also develops the mechanical skills of the students by direct exposure to different machines and tools by demonstration and experimental technique.</li> </ul>	CO1: Learn the use of measurement and dimensional analysis. CO2: Learn basic mechanical skills and use in daily life. CO3: Have knowledge of cutting the various metals. CO4: Learn about the electrical and electronic skills and use in daily life. CO5: Learn the concept of power generation systems.
706	BSC304D	Computational physics skills	<ul style="list-style-type: none"> <li>• This course is intended to give an insight into computers and their scientific applications.</li> <li>• To familiarize students with the use of computer to solve physics problems.</li> <li>• To teach a programming language namely FORTRAN and data visualization using Gnuplot.</li> <li>• To teach them to prepare long formatted document using latex.</li> </ul>	CO1: Learn the importance of computers in solving problems in Physics. CO2: Learn how to plan for writing the algorithm for solving a problem by drawing the flowchart of simple problems. CO3: Learn “Scientific Word Processing”, particularly, how to use the LaTeX software in writing articles and papers. CO4: To have hands-on experience on computational tools. CO5: Simulate the motion of a particle in a central force field and plot the output for visualization.
707	BSC304E	Pharmaceutical Chemistry	<ul style="list-style-type: none"> <li>• To understand the basic concepts of drugs &amp; pharmaceuticals, synthesis of analgesics, antipyretic and anti-inflammatory agents</li> <li>• To learn the synthesis of antibiotics, antibacterial, antifungal and antiviral agents.</li> <li>• To get the knowledge of synthesis of central nervous system, cardiovascular, antilaprosy, HIV-AIDS related drugs.</li> <li>• To understand the fermentation process.</li> <li>• To understand the Production of lysine, glutamic acid and some vitamin.</li> </ul>	CO1: Learn the basic concepts of drugs & pharmaceuticals and synthesis of analgesics, antipyretic and anti-inflammatory agents CO2: Competent to synthesis of antibiotics, antibacterial, antifungal and antiviral agents. CO3: Synthesize of central nervous system, cardiovascular, antilaprosy, HIV-AIDS related drugs. CO4: Understand the fermentation process. CO5: Understand the production of lysine, glutamic acid and some vitamin.

## Course Outcomes

S. No.	Course Code	Course Title	Course Objective	Expected Outcome
708	BSC304F	Basic Analytical Chemistry	<ul style="list-style-type: none"> <li>• To understand the basic concepts of analytical chemistry</li> <li>• To learn the different parameters of soil analysis.</li> <li>• To get the knowledge of analysis of water and food products.</li> <li>• To understand the chromatography techniques.</li> <li>• To get the skills for analysis of cosmetics.</li> </ul>	CO1: Understand the basic concepts of analytical chemistry. CO2: Learn the different parameters of soil analysis. CO3: Understand and apply the analysis of water and food products. CO4: Understand the chromatography techniques. CO5: Achieve the skills for analysis of cosmetics.
709	BSC305	Thermal Physics and Statistical Mechanics Lab	<ul style="list-style-type: none"> <li>• This course will introduce the concept of Heat.</li> <li>• The primary goal is to understand the fundamental laws of thermodynamics</li> <li>• To understand the Planck's constant and Stefan's Constant.</li> <li>• This coursework will also enable the students to understand the connection between the macroscopic observations of physical systems and microscopic behavior of atoms.</li> </ul>	CO1: Learn the basic concepts of thermodynamics. CO2: Learn the basic concepts of the Thermal Conductivity. CO3: Have a knowledge of the real gas equations, Van der Waal equation of state, the Joule-Thompson effect. CO4: Learn about the black body radiations, Stefan-Boltzmann's law, Rayleigh-Jean's law and Planck's law and their significances. CO5: The students are expected to perform the experiments related to heat transfer.
710	BSC306	Solutions, Phase Equilibria, Conductance, Electrochemistry & Chemistry-II Lab	<ul style="list-style-type: none"> <li>• To understand the concept of equilibrium.</li> <li>• To know the conductance and affects of different acid-base strength.</li> <li>• To learn the potentiometric titrations.</li> <li>• To get the knowledge of systematic qualitative organic analysis of organic compounds and separation techniques.</li> </ul>	CO1: Understand the concept of equilibrium. CO2: Explain the conductance and affects of different acid-base strength. CO3: Learn the potentiometric titrations. CO4: Understand and analyze of systematic qualitative organic analysis of organic compounds and separation techniques.
711	BSC401	Waves and optics	<ul style="list-style-type: none"> <li>• This course reviews the concepts of waves and optics learnt at school from a more advanced perspective and goes on to build new concepts.</li> <li>• It begins with explaining ideas of superposition of harmonic oscillations leading to physics of travelling and standing waves.</li> <li>• The course also provides an in depth understanding of wave phenomena of light, namely, interference and diffraction with emphasis on practical applications of the same.</li> </ul>	CO1: Apply basic knowledge of principles and theories about the behavior of light and the physical environment to conduct experiments. CO2: Explain several phenomena in everyday life. CO3: Use the principles of wave motion and superposition to explain the Physics of polarisation, interference and diffraction. CO4: Understand the working of selected optical instruments like biprism, interferometer, diffraction grating, and holograms. CO5: Recognize and use a mathematical oscillator equation and wave equation, and derive these equations for certain systems.

## Course Outcomes

S. No.	Course Code	Course Title	Course Objective	Expected Outcome
712	BSC402	Transition Metal & Coordination Chemistry, States And Matter Chemical Kinetics	<ul style="list-style-type: none"> <li>• To learn about the behavior of transition and inner transition elements.</li> <li>• To impart knowledge regarding coordination compounds.</li> <li>• To get comprehensive knowledge of kinetic theory of gases.</li> <li>• To get the knowledge about various states of matter.</li> <li>• To understand the kinetics of chemical reactions.</li> </ul>	CO1: Interpret the behaviour of transition and inner transition elements. CO2: Summarize coordination compounds. CO3: Understand the kinetic theory of gases. CO4: Interpret the various states of matter. CO5: Understand the kinetics of chemical reactions.
713	BSC403	Algebra	The objective of this course is to expose student to understand the basic concepts of Algebra like groups, sub groups, order of groups, cyclic group, Rings, Fields.	CO1: Recognize the mathematical objects called groups. CO2: Link the fundamental concepts of groups and Subgroups. CO3: Explain the significance of the notions of cosets, normal subgroups, and factor groups. Analyze consequences of Lagrange's theorem CO4: Familiarize with the concept of Ring, Integral domain and Fields.
714	BSC404A	Vector Calculus	The objective of this course is to expose student to understand the basic concepts of Vector Calculus like vector function, differentiation of vector function, divergence, gradient, curl, directional derivatives, Green's theorem, divergence theorem, Stocke's theorem.	CO1: Learn the concept of vector functions and vector fields. CO2: Apply the concept of ordinary, partial and total derivatives of vector function in real life problems. CO3: Apply the concept of Gradient, divergence and curl of vector function fields CO4: Realize importance of Green, Gauss and Stokes' theorems in other branches of mathematics.
715	BSC404B	Theory of Equations	The objective of this course is to expose student to understand the basic concepts of Theory of Equations like polynomials, Graphical representation of a polynomials, Descarte's rule of signs, Relation between the roots and the coefficients of equations. Algebraic solutions of the cubic and biquadratic.	CO1: Find the roots/solutions of algebraic equations using the various techniques of Theory of Equations. CO2: Analysis and study the symmetric functions. CO3: Understand the concept of transformation of equations.

## Course Outcomes

S. No.	Course Code	Course Title	Course Objective	Expected Outcome
716	BSC404C	Electrical circuit & network skills	<ul style="list-style-type: none"> <li>• To develop an understanding of basic principles of electricity and its household applications.</li> <li>• To impart basic knowledge of solid state devices and their applications, understanding of electrical wiring and installation.</li> <li>• To review the concepts of electrical theory.</li> </ul>	CO1: Learn the importance of basic electrical equipment's such as ammeter, voltmeter, galvanometer etc. in daily life. CO2: Learn difference between AC and DC circuits. CO3: Learn electrical drawing and use of electrical components. CO4: To have hands-on experience on electrical tools. CO5: Know the information about electrical protection.
717	BSC404D	Technical drawing	<ul style="list-style-type: none"> <li>• To introduce the students to modern visualization techniques and their applications in diverse areas including computer aided design.</li> <li>• To offer hands-on experience of engineering drawing based on knowledge gained using computer aided designing software.</li> <li>• To review the concepts of technical drawing.</li> </ul>	CO1 Understanding the concept of a sectional view and learn proper technique for drawing an aligned sections. CO2 Understanding use of spatial visualization by constructing an orthographic multi view drawing. CO3 Expert in drawing simple curves, spiral, Orthographic projections of points, lines and of solids. CO4 To have hands-on experience on technical writing on scientific studies. CO5 Exposure to Computer Aided Design (CAD) and Auto CAD technique.
718	BSC404E	Analytical Clinical Biochemistry	<ul style="list-style-type: none"> <li>• To build up knowledge of carbohydrates.</li> <li>• To impart the acquaintance of protein.</li> <li>• To understand the role of different enzymes.</li> <li>• To give basics of lipids and lipoproteins.</li> <li>• To understand the analysis of urine and blood.</li> </ul>	CO1: Build up knowledge of carbohydrates. CO2: Understand the role of protein. CO3: Understand the role of different enzymes. CO4: Understand the basics of lipids and lipoproteins. CO5: Understand the analysis of urine and blood.
719	BSC404F	Green Methods in Chemistry	<ul style="list-style-type: none"> <li>• To collect the basics of green chemistry.</li> <li>• To understand the alternative sources of energy and green solvents.</li> <li>• To get the knowledge of alternative methods and solvents.</li> <li>• To design the eco-friendly pigments.</li> <li>• To green synthesis of plastic.</li> </ul>	CO1: Develop the basics of green chemistry. CO2: Interpret the alternative sources of energy and green solvents. CO3: Choose alternative methods of synthesis and solvents. CO4: Design the eco-friendly pigments. CO5: Understand the green synthesis of plastic.

## Course Outcomes

S. No.	Course Code	Course Title	Course Objective	Expected Outcome
720	BSC405	Waves and optics Lab	<ul style="list-style-type: none"> <li>• This course reviews the concepts of waves and optics.</li> <li>• It begins with explaining ideas of superposition of harmonic oscillations leading to physics of travelling and standing waves.</li> <li>• The course also provides an in depth understanding of wave phenomena of light, namely, interference and diffraction with emphasis on practical applications of the same.</li> </ul>	CO1: Apply basic knowledge of principles and theories about the behavior of light and the physical environment to conduct experiments. CO2: Explain several phenomena in everyday life. CO3: Use the principles of wave motion and superposition to explain the Physics of polarisation, interference and diffraction. CO4: Understand the working of selected optical instruments like biprism, interferometer, diffraction grating, and holograms. CO5: In the laboratory course, student will gain hands-on experience of using various optical instruments.
721	BSC406	Transition Metal & Coordination Chemistry Lab	<ul style="list-style-type: none"> <li>• To get the skills of identification from mixture of two anions and two cations including complexometric titrations.</li> <li>• To understand the concept and measurement of surface tension, viscosity, chemical kinetics.</li> <li>• To understand the process of saponification of ethyl acetate.</li> </ul>	CO1: Get the skills of identification from mixture of two anions and two cations including complexometric titrations. CO2: Understand the concept and measurement of surface tension, viscosity and chemical kinetics. CO3: Understand the process of saponification of ethyl acetate.
722	BSC501A	Probability and Statistics	The objective of this course is to expose student to understand the basic concepts of Probability and Statistics like sample space, random variables, probability mass function and probability density functions, various probability distribution, Mathematical expectation, moments, and marginal and conditional distributions.	CO1: Understand the basic concepts of probability. CO2: Appreciate the importance of probability distribution of random variables and to know the notion of central tendency. CO3: Establish the joint distribution of two random variables in terms their correlation and regression. CO4: Understand central limit theorem which shows that the empirical frequencies of so many natural populations exhibit normal distribution.
723	BSC501B	Mathematical Modelling	The objective of this course is to expose student to understand the basic concepts of Mathematical Modeling.	CO1: Understand the basic concepts of mathematical modelling. CO2: Build the mathematical models of real life problems. CO3 Applications of differential equations in modelling

## Course Outcomes

S. No.	Course Code	Course Title	Course Objective	Expected Outcome
724	BSC501C	Radiology & safety	<ul style="list-style-type: none"> <li>• This course focuses on the applications of nuclear techniques and radiation protection.</li> <li>• It will not only enhance the skills towards the basic understanding of the radiation but will also provide the knowledge about the protective measures against the radiation exposure.</li> <li>• It imparts all the skills required by a radiation safety officer or any job dealing with radiation such as X-ray operators, nuclear medicine dealing jobs: chemotherapists, PET MRI CT scan, gamma camera etc. operators etc.</li> <li>• To review the concepts of radiation and safety.</li> </ul>	<p>CO1: Understand the hazards of radiation and the safety measures to guard against these hazards.</p> <p>CO2: Knowledge about the nature of interaction of matter with radiations and radiation shielding by appropriate materials.</p> <p>CO3: Learn about the devices which apply radiations in medical sciences, such as MRI, PET.</p> <p>CO4: To have hands-on experience on radiation and safety.</p> <p>CO5: Learn the basic aspects of the atomic and nuclear Physics.</p>
725	BSC501D	Weather forecasting	<ul style="list-style-type: none"> <li>• The aim of this course is to impart theoretical knowledge to the students.</li> <li>• To enable them to develop awareness and understanding of the causes and effects of different weather phenomena and basic forecasting techniques.</li> <li>• To review the concepts of weather and climate.</li> </ul>	<p>CO1: Knowledge of the elements of the atmosphere, its composition at various heights.</p> <p>CO2: Learn basic techniques to measure temperature and its relation with cyclones and anti-cyclones.</p> <p>CO3: Knowledge of simple techniques to measure wind speed and its directions, humidity and rainfall.</p> <p>CO4: Knowledge of global wind systems, jet streams, local thunderstorms, tropical cyclones, tornadoes and hurricanes.</p> <p>CO5: Develop skills needed for weather forecasting, mathematical simulations, weather.</p>
726	BSC501E	Chemistry of Cosmetics & Perfumes	<ul style="list-style-type: none"> <li>• To serve the knowledge of hair enrichment items.</li> <li>• To make the students understand about face glowing objects.</li> <li>• To understand preparation and uses of creams, antiperspirants and artificial flavours.</li> <li>• To get the facts of essential oils and their importance in cosmetic industries.</li> </ul>	<p>CO1: Summarize the hair enrichment items.</p> <p>CO2: Understand the face glowing objects.</p> <p>CO3: Understand the preparation and uses of creams, antiperspirants and artificial flavours.</p> <p>CO4: Understand the essential oils and their importance in cosmetic industries.</p>
727	BSC501F	Pesticide Chemistry	<ul style="list-style-type: none"> <li>• To understand the basic knowledge of pesticides.</li> <li>• To get the structure activity relationship.</li> <li>• To learn the synthesis and uses of some important pesticides.</li> </ul>	<p>CO1: Understand the basic knowledge of pesticides.</p> <p>CO2: Determine the structure activity relationship of pesticides.</p> <p>CO3: Synthesize and uses of some important pesticides.</p>

## Course Outcomes

S. No.	Course Code	Course Title	Course Objective	Expected Outcome
728	BSC502A	Matrices	The objective of this course is to expose student to understand the basic concepts of Vector spaces, Subspaces, Basis, quotient spaces, Linear transformations, Matrix form of basic geometric transformations.	CO1: Understand the concepts of vector spaces, subspaces, bases, dimension and their properties. CO2: Relate matrices and linear transformations; compute eigen values and eigen vectors of linear transformations. CO3: Realise importance of a Translation, Dilation, Rotation, Reflection in a point, line and plane. CO4: Applications of matrices in physical and life sciences
729	BSC502B	Mechanics	The objective of this course is to expose student to understand the basic concepts of coplanar forces, Laws of friction, Work and potential energy, Motion of a particle in three dimensions, Simple harmonic motion and Projectile Motion.	CO1: Familiarize with subject matter, which has been the single centre, to which were drawn mathematicians, physicists, astronomers, and engineers together. CO2: Understand necessary conditions for the equilibrium of particles acted upon by various forces and learn the principle of virtual work for a system of coplanar forces acting on a rigid body. CO3: Determine the centre of gravity of some materialistic systems. CO4: Deal with the kinematics and kinetics of the rectilinear and planar motions of a particle including the constrained oscillatory motions of particles. CO5: Learn that a particle moving under a central force describes a plane curve and know the Kepler's laws of the planetary motions, which were deduced by him long before the mathematical theory given by Newton.
730	BSC502C	Linear Algebra	The objective of this course is to expose student to understand the basic concepts of Vector spaces, Subspaces, Basis, quotient spaces , Linear transformations, Matrix form of basic geometric transformations.	CO1: Understand the concepts of vector spaces, subspaces, bases, dimension and their properties. CO2: Relate matrices and linear transformations, compute eigen values and eigen vectors of linear transformations. CO3: Learn properties of inner product spaces and determine orthogonality in inner product spaces. CO4: Realise importance of adjoint of a linear transformation and its canonical form.

## Course Outcomes

S. No.	Course Code	Course Title	Course Objective	Expected Outcome
731	BSC503A	Analytical Methods in Chemistry	<ul style="list-style-type: none"> <li>• To impart the knowledge of analysis and spectrometry.</li> <li>• To understand the flame atomic absorption and emission spectrometry.</li> <li>• To learn the thermal and electroanalytical methods of analysis.</li> <li>• To get the comprehension about different separation techniques.</li> </ul>	<p>CO1: Interpret qualitative and quantitative analysis of data and spectrometry.</p> <p>CO2: Understand the instrumentation and working of flame atomic absorption and emission spectrometry with their uses.</p> <p>CO3: Learn the thermal and electro-analytical methods of analysis.</p> <p>CO4: Evaluate different separation techniques.</p>
732	BSC503B	Novel Inorganic Solids	<ul style="list-style-type: none"> <li>• To explain the mechanism of solid-state synthesis and different characterization techniques and their principle.</li> <li>• To get the knowledge of concept of nanomaterials, their synthesis and properties.</li> <li>• To impart the knowledge of engineering materials for mechanical construction.</li> <li>• To obtain the information of composite materials.</li> <li>• To give the basics of speciality polymers.</li> </ul>	<p>CO1: Understand the mechanism of solid-state synthesis and different characterization techniques and their principle.</p> <p>CO2: Explain the concept of nanomaterials, their synthesis and properties.</p> <p>CO3: Gain knowledge of engineering materials for mechanical construction.</p> <p>CO4: Learn the information of composite materials.</p> <p>CO5: Explain basics of speciality polymers.</p>
733	BSC503C	Organometallics, Bioinorganic chemistry , Polynuclear hydrocarbons and UV ,IR Spectroscopy	<ul style="list-style-type: none"> <li>• To understand the chemistry and applications of 3d elements.</li> <li>• To get the basics of organometallic compounds.</li> <li>• To impart the knowledge of bio-inorganic chemistry and role of metal ions present in biological systems.</li> <li>• To understand the fundamentals of functional group chemistry, polynuclear hydrocarbons and heterocyclic compounds through the study of methods of preparation, properties and chemical reactions with underlying mechanism.</li> <li>• To use basic theoretical principles underlying UV-visible and IR spectroscopy as a tool for functional group identification in organic molecules.</li> </ul>	<p>CO1: Understand the chemistry and applications of 3d elements.</p> <p>CO2: Get the basics of organometallic compounds.</p> <p>CO3: Impart the knowledge of bio-inorganic chemistry and role of metal ions present in biological systems.</p> <p>CO4: Understand the synthesis of polynuclear hydrocarbons and heterocyclic compounds.</p> <p>CO5: Identify organic molecules through UV-visible and IR spectroscopy as a tool for functional group</p>

## Course Outcomes

S. No.	Course Code	Course Title	Course Objective	Expected Outcome
734	BSC503D	Chemistry Of Main Group Elements, Theories Of Acids And Bases	<ul style="list-style-type: none"> <li>• To understand the basics of acids &amp; bases and their inter relations.</li> <li>• To get the knowledge about general principles of metallurgy.</li> <li>• To impart the comprehension of s- and p-block elements.</li> <li>• To explain different compounds and their applications in industrial and environmental chemistry, hydrides of groups 13 to 17, interhalogen and pseudohalides compounds.</li> <li>• To give the basic knowledge of noble gases and inorganic polymers.</li> </ul>	<p>CO1: Understand the basics of acids &amp; bases and their inter relations.</p> <p>CO2: Explain about general principles of metallurgy.</p> <p>CO3: Know the importance of s- and p-block elements.</p> <p>CO4: Analyse properties and applications of hydrides of groups 13 to 17, interhalogen and pseudohalides compounds in industrial and environmental chemistry.</p> <p>CO5: Get the basic knowledge of noble gases and inorganic polymers.</p>
735	BSC504A	Digital, Analog and Instrumentation	<ul style="list-style-type: none"> <li>• This paper aims to cover the basic digital and analog electronic systems.</li> <li>• The concept of Boolean algebra is discussed in detail and arithmetic circuits are described.</li> <li>• Students will learn the physics of semiconductor devices such as p-n junction, rectifier diodes and bipolar junction transistors.</li> <li>• To review the concepts of instrumentation theory.</li> </ul>	<p>CO1 Knowledge of analog and digital circuits, Number systems, their inter-conversions, Basic logic gates and combinational circuits.</p> <p>CO2 Knowledge of P and N type semiconductors, P-N junctions, LEDs, photodiode and solar cells, transistors.</p> <p>CO3 Use the principles of digital electronics to explain the Physics of daily life.</p> <p>CO4 Understand the working of digital and analog instruments like CRO.</p> <p>CO5 Recognize and use Operational amplifiers and its characterization.</p>
736	BSC504B	Elements of Modern Physics	<ul style="list-style-type: none"> <li>• The objective of this course is to teach the physical and mathematical foundations necessary for learning various topics in modern physics which are crucial for understanding atoms, molecules, photons, nuclei and elementary particles.</li> <li>• These concepts are also important to understand phenomena in laser physics, condensed matter physics and astrophysics.</li> <li>• To review the concepts of modern physics.</li> </ul>	<p>CO1 Know main aspects of the inadequacies of classical mechanics and understand historical development of quantum mechanics.</p> <p>CO2 Understanding the properties of nuclei, nuclear forces and structure of atomic nucleus.</p> <p>CO3 Understand fission and fusion to produce nuclear energy in nuclear reactor and stellar energy in stars.</p> <p>CO4 Understand various interactions of electromagnetic radiation with matter.</p> <p>CO5 Understand the spontaneous and stimulated emission of radiation, optical pumping and population inversion.</p>

## Course Outcomes

S. No.	Course Code	Course Title	Course Objective	Expected Outcome
737	BSC504C	Mathematical Physics	<ul style="list-style-type: none"> <li>The emphasis of course is to equip students with the mathematical tools required in solving problem of interest to physicists.</li> <li>The course will expose students to fundamental computational physics skills and hence enable them to solve a wide range of physics problems.</li> <li>To review the concepts of mathematical physics.</li> </ul>	CO1 Knowledge of calculus, vectors, vector calculus. CO2: Learn the Fourier analysis of periodic functions and their applications in physical problems. CO3: Learn the beta, gamma and the error functions and their applications in doing integrations. CO4: Know about the basic theory of errors, their analysis, and estimation. CO5: Acquire knowledge of methods to solve partial differential equations.
738	BSC504D	Solid State Physics	<ul style="list-style-type: none"> <li>This course introduces the basic concepts and principles required to understand the various properties exhibited by condensed matter, especially solids.</li> <li>It enables the students to appreciate how the interesting and wonderful properties exhibited by matter depend upon its atomic and molecular constituents.</li> <li>The gained knowledge helps to solve problems in solid state physics using relevant mathematical tools.</li> <li>It also communicates the importance of solid state physics in modern society.</li> </ul>	CO1: Understand about crystalline and amorphous substances. CO2: Knowledge of lattice vibrations, phonons and theory of specific heat of solids. CO3: Knowledge of different types of magnetism and hysteresis loops and energy loss. CO4: Understanding the band theory of solids and must be able to differentiate insulators, conductors and semiconductors. CO5: Understand the Idea about superconductors and their classifications.
739	BSC505A	Analytical Methods in Chemistry Lab	<ul style="list-style-type: none"> <li>To get the skills of Chromatography which is a Separation Techniques</li> <li>To get the skills of Solvent Extractions</li> <li>To understand the different parameters of soil analysis.</li> <li>To impart the knowledge of spectrophotometry in different experiments.</li> </ul>	CO1 Get the skills of Separation Techniques by Chromatography. CO2 Get the skills of Solvent Extractions CO3 Understand the different parameters of soil analysis. CO4 Impart the knowledge of spectrophotometry in different experiments.
740	BSC505B	Novel Inorganic Solids Lab	<ul style="list-style-type: none"> <li>To determine cation exchange method and total difference of solids.</li> <li>To synthesis of hydrogel and synthesis of silver and gold metal nanoparticles.</li> </ul>	CO1 Understand and analyze cation exchange method and total difference of solids. CO2 Synthesis of hydrogel and understand the process of silver and gold metal nanoparticles synthesis.

## Course Outcomes

S. No.	Course Code	Course Title	Course Objective	Expected Outcome
741	BSC505C	Organometallics, Bioinorganic chemistry ,Polynuclear hydrocarbons and UV ,IR Spectroscopy Lab	<ul style="list-style-type: none"> <li>• To understand the separation of mixtures by chromatography and measure the Rf value.</li> <li>• To know the preparation of complexes and measurement of their conductivity.</li> <li>• To understand the systematic qualitative organic analysis of organic compounds and preparation of their derivative.</li> </ul>	CO1 Utilize chromatography techniques for the separation of mixtures and measure the Rf value. CO2 Prepare metal complexes and measure their conductivity. CO3 Interpret the systematic qualitative organic analysis of organic compounds and preparation of their derivative.
742	BSC505D	Chemistry Of Main Group Elements, Theories Of Acids And Bases Lab.	<ul style="list-style-type: none"> <li>• To quantitative estimation of some chemical species.</li> <li>• To acquire the skills of preparation of double salt and complex.</li> </ul>	CO1 Estimate of some chemical species. CO2 Acquire the skills of preparation of double salt and complex.
743	BSC506A	Digital, Analog and Instrumentation Lab	<ul style="list-style-type: none"> <li>• This paper aims to cover the basic digital and analog electronic systems.</li> <li>• The concept of Boolean algebra is discussed experimentally and arithmetic circuits are described.</li> <li>• Students will learn the physics of semiconductor devices such as p-n junction, rectifier diodes and bipolar junction transistors.</li> <li>• To review the concepts of instrumentation theory.</li> </ul>	CO1 Understand the difference between analog and digital circuits. CO2 Know the working of P-N junction, Forward and Reverse biased junctions, LEDs, photodiode and solar cells. CO3 Use the principles of digital electronics to explain the Physics of daily life. CO4 Understand the working of digital and analog instruments like CRO. CO5 Student will gain hands-on experience of using various digital and analog instruments.
744	BSC506B	Elements of Modern Physics Lab	<ul style="list-style-type: none"> <li>• The objective of this course is to understanding atoms, molecules, photons, nuclei and elementary particles.</li> <li>• These concepts are also important to understand phenomena in laser physics, condensed matter physics and astrophysics.</li> <li>• To review the concepts of modern physics.</li> </ul>	CO1 Know main aspects of dual nature of matter. CO2 Understanding the properties of nuclei, nuclear forces and structure of atomic nucleus. CO3 Understand fission and fusion to produce nuclear energy in nuclear reactor and stellar energy in stars. CO4 Understand the spontaneous and stimulated emission of radiation, optical pumping and population inversion. CO5 Student will gain hands-on experience of using various phenomena.

## Course Outcomes

S. No.	Course Code	Course Title	Course Objective	Expected Outcome
745	BSC506C	Mathematical Physics Lab	<ul style="list-style-type: none"> <li>• The emphasis of course is to equip students with the mathematical tools required in solving problem of interest to physicists.</li> <li>• The course will expose students to fundamental computational physics skills and hence enable them to solve a wide range of physics problems.</li> <li>• To review the concepts of mathematical physics.</li> </ul>	CO1 Knowledge of calculus, vectors, vector calculus. CO2 Learn the Fourier analysis of periodic functions and their applications in physical problems. CO3 Learn the beta, gamma and the error functions and their applications in doing integrations. CO4 Know about the basic theory of errors, their analysis, and estimation with examples of simple experiments in Physics. CO5 Learn the fundamentals of the C and C++ programming languages and their applications.
746	BSC506D	Solid State Physics Lab	<ul style="list-style-type: none"> <li>• This course introduces the basic concepts and principles required to understand the various properties exhibited by condensed matter, especially solids.</li> <li>• To understand the concept of Magnetic susceptibility.</li> <li>• To study the BH curve.</li> <li>• The gained knowledge helps to solve problems in solid state physics using relevant mathematical tools.</li> <li>• It also communicates the importance of solid state physics in modern society.</li> </ul>	CO1: Know about crystalline and amorphous substances. CO2: Knowledge of lattice vibrations, phonons of solids. CO3: Knowledge of different types of magnetism and hysteresis loops and energy loss. CO4: Understand the basic idea about superconductors and their classifications. CO5: To carry out experiments based on the theory that they have learned.
747	BSC601A	Transportation and Game Theory	<p>The objective of this course is to expose student to understand the basic concepts of Transportation problem, algorithm for solving transportation problem, assignment problem, Job Sequencing Problems, and Game theory.</p>	CO1: Formulate the transportation problems and to solve them. CO2: Learn about the job sequencing problem and its applications, CO3: Learn about the Assignment problems and its applications. CO4: Provide knowledge of Game Theory and its applications.

## Course Outcomes

S. No.	Course Code	Course Title	Course Objective	Expected Outcome
748	BSC601B	Graph Theory	The objective of this course is to expose student to understand the basic concepts of Graph Theory and its applications.	CO1: Appreciate the definition and basics of graphs along with types and their examples. CO2: Understand the definition of a tree and learn its applications to fundamental circuits. CO3: Know the applications of graph theory to network flows. CO4: Understand the notion of planarity and coloring of a graph. CO5: Relate the graph theory to the real-world problems.
749	BSC601C	Applied optics	<ul style="list-style-type: none"> <li>• This paper provides the conceptual understanding of various branches of modern optics to the students.</li> <li>• This course introduces basic principles of LASER, Holography and signal transmission via optical fiber.</li> <li>• To review the concepts of optics and their applications.</li> </ul>	CO1 Understand optical phenomena and technology. CO2 Qualitative understanding of basic lasing mechanism, types of Lasers, and its applications in developing LED, Holography. CO3 Understand propagation of electromagnetic wave in a nonlinear media. CO4 Develop cooperative skills and reinforce their understanding of concepts. CO5 Use the concepts of applied optics in daily life.
750	BSC601D	Basic instrumentation skills	<ul style="list-style-type: none"> <li>• To expose the students to various aspects of instruments and their usage through hands-on mode.</li> <li>• To provide them a thorough understanding of basics of measurement, measurement devices such as electronic voltmeter, Oscilloscope, signal and pulse generators, Impedance bridges, digital instruments etc.</li> <li>• To review the concepts of basic instrumentation skills.</li> </ul>	CO1: Develop skills to use basic electrical instruments. CO2: Acquire efficiency in making signal generators and analysis of obtained signals. CO3: Learn to understand and use various types of digital instruments. CO4: Develop knowledge of making measurements with Impedance Bridges and Q meters. CO5: Knowledge on accuracy, precision, resolution, range and errors/uncertainty in measurements.

## Course Outcomes

S. No.	Course Code	Course Title	Course Objective	Expected Outcome
751	BSC601E	Chemical Technology & Society	<ul style="list-style-type: none"> <li>• To understand the use of basic principles of chemical technology.</li> <li>• To introduce the scope of different equipments needed in chemical technology.</li> <li>• To develop scientific solutions for societal needs.</li> <li>• To learn about energy from natural sources.</li> <li>• To acquire the knowledge of proteins and nucleic acids.</li> </ul>	CO1: Understand the basic principles of chemical technology. CO2: Know the scope of different equipments needed in chemical technology. CO3: Develop scientific solutions for societal needs. CO4: Learn about energy from natural sources. CO5: Acquire the knowledge of proteins and nucleic acids.
752	BSC601F	Fuel Chemistry	<ul style="list-style-type: none"> <li>• To understand the renewable and non-renewable energy sources and some basics of coal.</li> <li>• To understand the process of formation of coke from coal.</li> <li>• To get the knowledge of petroleum and petrochemical Industry.</li> <li>• To learn the reforming of petroleum and non-petroleum fuels, synthesis of fuel from waste, gaseous and liquids synthetic fuels and petrochemical products:</li> <li>• To develop the basic knowledge about lubricants.</li> </ul>	CO1 Understand the renewable and non-renewable energy sources and basics of coal. CO2 Explain the process of formation of coke from coal. CO3 Get the knowledge of petroleum and petrochemical Industry. CO4 Learn the reforming of petroleum and non-petroleum fuels, synthesis of fuel from waste, gaseous and liquids synthetic fuels and petrochemical products: CO5 Illustrate about lubricants.
753	BSC602A	Numerical Methods	<p>The objective of this course is to expose student to understand the basic concepts of various numerical methods to find the solutions of algebraic and transcendental equations, Simultaneous equations, Interpolations techniques, Numerical differentiation and integration.</p>	CO1 Obtain numerical solutions of algebraic and transcendental equations. CO2 Find numerical solutions of system of linear equations and check the accuracy of the Solutions. CO3 Learn about various interpolating and extrapolating methods. CO4 Solve initial and boundary value problems in differential equations using numerical Methods. CO5 Apply various numerical methods in real life problems.

## Course Outcomes

S. No.	Course Code	Course Title	Course Objective	Expected Outcome
754	BSC602B	Complex Analysis	The objective of this course is to expose student to understand the basic concepts of complex variables, complex functions and their derivatives and integrations, Contour integrals, Convergence of sequences and series.	CO1 Visualize complex numbers as points of $\mathbb{R}^2$ and stereographic projection of complex plane on the Riemann sphere. CO2 Understand the significance of differentiability and analyticity of complex functions leading to the Cauchy-Riemann equations. CO3 Learn the role of Cauchy-Goursat theorem and Cauchy integral formula in evaluation of contour integrals. CO4 Apply Liouville's theorem in fundamental theorem of algebra. CO5 Understand the convergence, term by term integration and differentiation of a power series. CO6 Learn Taylor and Laurent series expansions of analytic functions, classify the nature of singularity, poles and residues and application of Cauchy Residue theorem.
755	BSC602C	Linear Programming)	The objective of this course is to expose student to understand the basic concepts of Linear Programming Problems, Theory of simplex method, simplex method to solve LPP, Assignment and Transportation problems.	CO1 Analyze and solve linear programming models of real life situations. CO2 Provide graphical solution of linear programming problems with two variables, and illustrate the concept of convex set and extreme points. CO3 Solve linear programming problems using simplex method. CO4 Learn techniques to solve transportation and assignment problems. CO5 Solve two-person zero sum game problems.

## Course Outcomes

S. No.	Course Code	Course Title	Course Objective	Expected Outcome
756	BSC603A	Polymer Chemistry	<ul style="list-style-type: none"> <li>• To know about history of polymeric materials, classification and different mechanisms of polymerization and polymerization techniques.</li> <li>• To evaluate kinetic chain length of polymers based on their mechanism.</li> <li>• To understand the crystallization &amp; crystallinity, structure property relationships and different methods of finding out average molecular weight of polymers.</li> <li>• To understand about glass transition temperature (Tg) and crystalline melting point (Tm) with their determinations.</li> <li>• To know about solid and solution properties of polymers with properties and applications of various useful polymers in our daily life.</li> </ul>	<p>CO1: Understand polymeric materials, classification and different mechanisms of polymerization and polymerization techniques.</p> <p>CO2: Learn the kinetics of polymerization.</p> <p>CO3: Understand the crystallization process and structure property relationships of polymers.</p> <p>CO4: Explain about glass transition temperature (Tg) and crystalline melting point (Tm) with their determinations.</p> <p>CO5: Know the importance and properties of polymers which are useful in our daily life.</p>
757	BSC603B	Green Chemistry	<ul style="list-style-type: none"> <li>• To understand the twelve principles of green chemistry, toxicity, hazard, risk of chemical substances, atom economy and minimization of toxicity.</li> <li>• To understand benefits of use of catalyst and bio catalyst, green solvents, microwaves and ultrasonic energy.</li> <li>• To know the ISD, Bhopal Gas Tragedy, and Flixborough accident.</li> <li>• To green synthesis of some compounds, microwave assisted reactions in water, ultrasound assisted reactions and surfactants for carbon dioxide.</li> <li>• To get the skills for designing of environmentally safe marine antifoulant, rightfit pigment, green synthesis of plastic from corn.</li> </ul>	<p>CO1 Understand the all principles of green chemistry.</p> <p>CO2 Know the benefits of catalysts/ bio catalyst, green solvents, microwaves and ultrasonic energy.</p> <p>CO3 Understand the ISD and know the facts of Bhopal Gas Tragedy, and Flixborough accident.</p> <p>CO4 Know the green synthesis of some compounds, microwave assisted reactions in water, ultrasound assisted reactions and surfactants for carbon dioxide.</p> <p>CO5 Get the skills for designing of Environmentally safe marine antifoulant, rightfit pigment, green synthesis of plastic from corn.</p>

## Course Outcomes

S. No.	Course Code	Course Title	Course Objective	Expected Outcome
758	BSC603C	Instrumental Methods of Analysis	<ul style="list-style-type: none"> <li>• To perform experiment with accuracy and precision and knowledge of infrared spectroscopy.</li> <li>• To understand basic principle and instrumentation of UV-Visible spectroscopy.</li> <li>• To learn separation of analytes by chromatography and details of Mass spectroscopy.</li> <li>• To get the knowledge of Atomic spectroscopy.</li> <li>• To impart the advanced knowledge of NMR spectroscopy, electroanalytical methods: and radiochemical methods.</li> </ul>	<p>CO1: Perform experiment with accuracy and precision and knowledge of infrared spectroscopy.</p> <p>CO2: Understand basic principle and instrumentation of UV-Visible spectroscopy.</p> <p>CO3: Learn separation of analytes by chromatography and details of Mass spectroscopy.</p> <p>CO4: Know the Atomic spectroscopy.</p> <p>CO5: Understand NMR spectroscopy, electroanalytical methods: and radiochemical methods and they will help to identify the unknown compound.</p>
759	BSC603D	Quantum Chemistry, Spectroscopy & Photochemistry	<ul style="list-style-type: none"> <li>• To learn about limitations of classical mechanics and solution in terms of quantum mechanics for atomic/molecular systems.</li> <li>• To develop an understanding of quantum mechanical operators, quantization, probability distribution, uncertainty principle and application of quantization to spectroscopy.</li> <li>• To understand the covalent bonding, valence bond, molecular orbital approaches and LCAO-MO treatment of different chemical species.</li> <li>• To interpret various types of spectra and know about their application in structure elucidation.</li> <li>• To impart the basic knowledge of photochemistry.</li> </ul>	<p>CO1 Learn the limitations of classical mechanics and solution in terms of quantum mechanics for atomic/molecular systems.</p> <p>CO2 Develop an understanding of quantum mechanical operators, quantization, probability distribution, uncertainty principle and application of quantization to spectroscopy.</p> <p>CO3 Understand the covalent bonding, valence bond, molecular orbital approaches and LCAO-MO treatment of different chemical species.</p> <p>CO4 Interpret various types of spectra and know about their application in structure elucidation.</p> <p>CO5 Impart the basic knowledge of photochemistry.</p>
760	BSC604A	Quantum Mechanics	<ul style="list-style-type: none"> <li>• After learning the elements of modern physics, in this course students would be exposed to more advanced concepts in quantum physics and their applications to problems of the sub atomic world.</li> <li>• To review the concepts of quantum mechanics.</li> <li>• Understanding the applications of quantum concepts on real world problems.</li> </ul>	<p>CO1: Know inadequacies of classical mechanics in explaining microscopic phenomena, quantum theory formulation.</p> <p>CO2: Understand the concept of wave function of quantum particle and probabilistic nature of its location.</p> <p>CO3: Understand the influence of electric and magnetic fields on atoms.</p> <p>CO4: The experiments using Sci-lab will enable the student to appreciate nuances involved in the theory.</p> <p>CO5: Understand quantum many body problems.</p>

## Course Outcomes

S. No.	Course Code	Course Title	Course Objective	Expected Outcome
761	BSC604B	Embedded System: Introduction to microcontroller	<ul style="list-style-type: none"> <li>• This course familiarizes students to the designing and development of embedded systems.</li> <li>• This course gives a review of microprocessor and introduces microcontroller 8051.</li> <li>• To review the concepts of microcontroller.</li> </ul>	CO1 Understand Embedded systems including its generic architecture, design and classifications. CO2 Know organization of intel microprocessor 8085, its architecture, pin diagram, timing diagram. CO3 Know programming with and without interrupt service request. CO4 Understand interfacing parallel and serial ADC and DAC. CO5 Know basics of embedded system development and product development with a brief introduction to Arduino.
762	BSC604C	Nuclear and Particle Physics	<ul style="list-style-type: none"> <li>• The objective of the course is to impart the understanding of the sub atomic particles and their properties.</li> <li>• It will emphasize to gain knowledge about the different nuclear techniques and their applications in different branches Physics and societal application.</li> <li>• The course will focus on the developments of problem based skills.</li> <li>• To review the concepts of nuclear and particle physics.</li> </ul>	CO1 Learn the ground state properties of a nucleus, mass number and atomic number. CO2 Learn about the process of radioactivity, the radioactive decay law. CO3 Learn the basic aspects of nuclear reactions, the Q-value of such reaction and its derivation from conservation laws. CO4 Learn some basic aspects of interaction of nuclear radiation with matter. CO5 Learn about the detectors of nuclear radiations.

## Course Outcomes

S. No.	Course Code	Course Title	Course Objective	Expected Outcome
763	BSC604D	Medical Physics	<ul style="list-style-type: none"> <li>• This course introduces a student to the basics of Medical Physics.</li> <li>• To review the concepts of medical physics.</li> <li>• To use physics laws and theories on biological systems.</li> </ul>	<p>CO1 Learn the application of Physics to clinical medicine.</p> <p>CO2 Gain a broad and fundamental understanding of Physics while developing particular expertise in medical applications.</p> <p>CO3 Learn about the human body, its anatomy, physiology and bio Physics, exploring its performance as a physical machine. Other topics include the Physics of the senses.</p> <p>CO4 Gain knowledge with reference to working of various diagnostic tools, medical imaging techniques, how ionizing radiation interacts with matter, how it affects living organisms and how it is used as a therapeutic technique and radiation safety practices.</p> <p>CO5 Imparts functional knowledge regarding need for radiological protection and the sources of an approximate level of radiation exposure for treatment purposes.</p>
764	BSC605A	Polymer Chemistry Lab	<ul style="list-style-type: none"> <li>• To understand the process of polymer synthesis by using different methods and their purification.</li> <li>• To know, how the polymers are characterized.</li> <li>• To get the knowledge of polymer analysis.</li> </ul>	<p>CO1 Prepare polymers by using different methods and their purification.</p> <p>CO2 Characterized the polymers.</p> <p>CO3 Evaluate the properties of polymer.</p>
765	BSC605B	Green Chemistry Lab	<ul style="list-style-type: none"> <li>• To know the green synthesis of nanoparticles and their characterization.</li> <li>• To understand the green synthesis of biodiesel.</li> <li>• To learn the principle of atom economy.</li> <li>• To know the importance of enzymes, green solvents and alternative sources of energy.</li> </ul>	<p>CO1 Prepare nanoparticles by green synthesis and characterize the nanoparticles.</p> <p>CO2 Understand and utilize green synthesis for the preparation of biodiesel.</p> <p>CO3 Learn the principle of atom economy.</p> <p>CO4 Know the importance of enzymes, green solvents and alternative sources of energy.</p>
766	BSC605C	Instrumental Methods of Analysis Lab	<ul style="list-style-type: none"> <li>• To learn the working and applications of different instruments</li> </ul>	<p>CO1: Learn the working and applications of different instruments.</p> <p>CO2: Determine different drugs / steroids in athletes</p>
767	BSC605D	Quantum Chemistry, Spectroscopy & Photochemistry Lab	<ul style="list-style-type: none"> <li>• To use the UV/Visible spectroscopy and its applications.</li> <li>• To understand the applications of colourimetry.</li> </ul>	<p>CO1: Learn the working and applications of UV/Visible spectroscopy.</p> <p>CO2: Understand and utilize the colourimetry.</p>

## Course Outcomes

S. No.	Course Code	Course Title	Course Objective	Expected Outcome
768	BSC606A	Quantum Mechanics Lab	<ul style="list-style-type: none"> <li>• In this course students would be exposed to more advanced concepts in quantum physics and their applications to problems of the sub atomic world.</li> <li>• To review the concepts of quantum mechanics.</li> <li>• Understanding the applications of quantum concepts on real world problems.</li> <li>• Use C/C++/Scilab for solving the problems based on Quantum Mechanics.</li> </ul>	<p>CO1: Understand basic concepts of quantum mechanics.</p> <p>CO2: The interpretation of wave function of quantum particle and probabilistic nature of its location and subtler points of quantum phenomena are exposed to the student.</p> <p>CO3: Study of influence of electric and magnetic fields on atoms will help in understanding Stark effect and Zeeman Effect respectively.</p> <p>CO4: The experiments using Scilab will enable the student to appreciate nuances involved in the theory.</p> <p>CO5: In this course, with the exposure in computational programming in the computer lab, the student will be in a position to solve Schrodinger equation for ground state energy and wave functions of various simple quantum mechanical one dimensional and three dimensional potentials.</p>
769	BSC606B	Embedded System: Introduction to microcontroller Lab	<ul style="list-style-type: none"> <li>• This course familiarizes students to the designing and development of embedded systems.</li> <li>• This course gives a review of microprocessor and introduces microcontroller 8051.</li> <li>• To review the concepts of microcontroller.</li> </ul>	<p>CO1 Embedded systems including its generic architecture, design and classifications, Embedded processors and microcontrollers.</p> <p>CO2 Organization of intel microprocessor 8085, its architecture, pin diagram, timing diagram, instruction set and programming in assembly language.</p> <p>CO3 Interfacing parallel and serial ADC and DAC.</p> <p>CO4 Basics of embedded system development and product development with a brief introduction to Arduino.</p> <p>CO5 In the laboratory course, student shall be able to design, fabricate, test and run the programs.</p>

## Course Outcomes

S. No.	Course Code	Course Title	Course Objective	Expected Outcome
770	BSC606C	Nuclear and Particle Physics Lab	<ul style="list-style-type: none"> <li>• The objective of the course is to impart the understanding of the sub atomic particles and their properties.</li> <li>• It will emphasize to gain knowledge about the different nuclear techniques and their applications in different branches Physics and societal application.</li> <li>• The course will focus on the developments of problem based skills.</li> <li>• To review the concepts of nuclear and particle physics.</li> </ul>	CO1 Learn the ground state properties of a nucleus. CO2 Learn about the process of radioactivity, the radioactive decay law, the emission of alpha, beta and gamma rays. CO3 Learn the basic aspects of nuclear reactions. CO4 Learn about the detectors of nuclear radiations. CO5 Gain knowledge on the basic aspects of particle Physics.
771	BSC606D	Medical Physics Lab	<ul style="list-style-type: none"> <li>• This course introduces a student to the basics of Medical Physics.</li> <li>• To review the concepts of medical physics.</li> <li>• To use physics laws and theories on biological systems.</li> </ul>	CO1: Focus on the application of Physics to clinical medicine. CO2: Gain a broad and fundamental understanding of Physics while developing particular expertise in medical applications. CO3: Learn about the human body, its anatomy, physiology and bio Physics, exploring its performance as a physical machine. Other topics include the Physics of the senses. CO4: Gain knowledge with reference to working of various diagnostic tools, medical imaging techniques, how ionizing radiation interacts with matter, how it affects living organisms and how it is used as a therapeutic technique and radiation safety practices. CO5: In the laboratory course, the student will be exposed to the workings of various medical devices.

## Course Outcomes

S. No.	Course Code	Course Title	Course Objective	Expected Outcome
772	AG 101	Fundamentals of Horticulture	<ul style="list-style-type: none"> <li>• To learn about inception of horticulture and its distinguishing features.</li> <li>• To know about the various branches of horticulture.</li> <li>• To study the propagation methods of ornamental plants.</li> <li>• To provide employment, often in rural areas.</li> </ul>	<p>CO1: Demonstrate a fundamental understanding of plant identification, propagation, orchard establishment, use and maintenance of plant material best suited for conventional and sustainable horticulture.</p> <p>CO2: Apply horticultural skills and knowledge to operate various business entities found in the horticultural industry.</p> <p>CO3: Demonstrate an understanding of the composition, fertility and biology of soil and how they relate to good plant growth.</p> <p>CO4: Identify and practice safe use of tools, equipment and supplies used in horticulture careers.</p> <p>CO5: Identify the research career opportunities in the horticulture industry as well as emerging trends.</p>
773	AG 102	Fundamentals of Plant Biochemistry and Biotechnology	<ul style="list-style-type: none"> <li>• To understand the concept of biochemistry and their importance</li> <li>• To study the bimolecular and their importance</li> <li>• To study the pathways of bimolecular synthesis and metabolism</li> <li>• To understand the concept of plant tissue culture</li> <li>• To know the techniques in plant tissue culture</li> <li>• To understand the gene transformation methods</li> <li>• To know the concepts of MAS</li> </ul>	<p>CO1 Know the structure and functions of cell organelles</p> <p>CO2 Classify biomolecules with structure and functions</p> <p>CO3 Discuss the pathways of biomolecules and regulations</p> <p>CO4 Identify the biomolecules in given sample</p> <p>CO5 Apply for entrepreneurship and crop improvement</p>
774	AG 103	Fundamentals of Soil Science	<ul style="list-style-type: none"> <li>• To understand basic concept regarding Pedological and edaphological concept of soil and soil genesis.</li> <li>• Effect of soil properties on plant nutrition, plant growth and crop production.</li> <li>• To know the beneficial and harmful effects of macro and micronutrients on plant growth.</li> </ul>	<p>CO1: Knowledge of rocks, minerals and soil formation.</p> <p>CO 2: Examine various horizon of soil profile and development</p> <p>CO3: Role of physical, chemical and biological properties of soil in relation to crop production.</p> <p>CO 4: Classify soils of India to have knowledge of soil taxonomy.</p> <p>CO5: Differentiate the beneficial and harmful effects of macro and micro nutrients.</p> <p>CO 6: Role of microorganism in soil.</p>

## Course Outcomes

S. No.	Course Code	Course Title	Course Objective	Expected Outcome
775	AG 104	Introduction to Forestry	<ul style="list-style-type: none"> <li>• To ensure long-term forest productivity and conservation of forest resource through prompt reforestation, soil conservation, afforestation and other measures.</li> <li>• To protect water quality in streams, lake and other water bodies.</li> </ul>	<p>CO1: Recognize various harvesting, transportation, and processing systems used in the management of forest resources and production of forest products.</p> <p>CO2: Illustrate and discuss about develop and evaluate management plans with multiple objectives and constraints.</p> <p>CO3: Demonstrate and discuss learn how to develop and apply silvicultural prescriptions appropriate to management objectives.</p> <p>CO4: Examine and develop forest inventory information and project future forest, stand, and tree conditions.</p> <p>CO5: Know about Nursery layout, seed sowing and experiment vegetative propagation techniques, Forest plantations and their management. Visits of nearby forest based industries.</p>
776	AG 105	Comprehension & Communication Skills in English	<ul style="list-style-type: none"> <li>• To develop critical thinking.</li> <li>• To improve reading skills.</li> <li>• To recognize and understand meaning of grammatical structure.</li> <li>• To develop written expression of thoughts and provide opportunities to explore more ideas.</li> <li>• To recognize, explain and use the rhetorical strategies and the formal elements.</li> </ul>	<p>CO1: Draw connections between personal experiences and the world of texts, and share responses with others.</p> <p>CO2: Identify and differentiate the different types of texts and techniques for strengthening vocabulary.</p> <p>CO3: Identify common sentence types and common errors in sentence composition.</p> <p>CO4: Produce coherent and unified paragraphs with adequate support and detail.</p> <p>CO5: Understand the purpose of professional writing and obtain the important tips for interview.</p>

## Course Outcomes

S. No.	Course Code	Course Title	Course Objective	Expected Outcome
777	AG 106	Fundamentals of Agronomy	<ul style="list-style-type: none"> <li>• To study and acquaint with basic knowledge of agriculture and its allied branches.</li> <li>• To know principles of agriculture practices, modern systems of farming of agricultural crops and best cropping management suitable in local climate.</li> <li>• To study about importance, classification, crop weeds competition, concepts of weed management principles and methods.</li> <li>• To study about herbicides with reference to classification, selectivity, resistance and allelopathy.</li> </ul>	<p>CO 1. Define agriculture, its importance, present status, scope, future prospect and cropping seasons of India.</p> <p>CO 2. Understand the impact of legal and ethical environment on agriculture.</p> <p>CO 3. Illustrate about crop cultivation and management practices.</p> <p>CO 4. Know principles of agriculture practices, modern systems of farming of agricultural crops and best cropping management suitable in local climate.</p> <p>CO 5. Adapt the best crop management technologies in problematic areas in agricultural field.</p>
778	AG 107A	Introductory Biology*	<ul style="list-style-type: none"> <li>• To know the living world and concept of origin of life</li> <li>• To know the cell and their structure and functions</li> <li>• To understand the concept of flowers and seed</li> <li>• To classify the plant family and their characteristics</li> <li>• To know the role of animals in agriculture</li> </ul>	<p>CO1 Understand the origin of life and their characteristics and evolution</p> <p>CO2 Know the cell and their structure and functions</p> <p>CO3 Understand the concept of flowers and seed</p> <p>CO4 Classify the plant family and their characteristics</p> <p>CO5 Know the role of animals in agriculture</p>
779	AG 107B	Elementary Mathematics*	<ul style="list-style-type: none"> <li>• To learn about straight lines and circles.</li> <li>• To apply knowledge of basic geometry skills to solve problems.</li> <li>• To know about the both differential and integral calculus.</li> <li>• To develop the skills to apply the concepts of calculus to solve practical problems</li> <li>• To learn, understand and apply the concepts and skill of matrices theory.</li> </ul>	<p>CO1. Competency in the areas that comprise the core of the geometry, calculus and matrices</p> <p>CO2. Demonstrate the ability to understand mathematical proofs and derivations</p> <p>CO3. Able to use appropriate methods to solve mathematical problems</p> <p>CO4. Able to construct appropriate mathematical models to solve a variety of practical problems</p> <p>CO5. Obtain a full-time position in a related field or placement</p>

## Course Outcomes

S. No.	Course Code	Course Title	Course Objective	Expected Outcome
780	AG 108	Agricultural Heritage	<ul style="list-style-type: none"> <li>• To know Agriculture in India - way of life and not an occupation.</li> <li>• To increase awareness of the rich heritage of Indian agriculture which is unique than any other civilization.</li> <li>• To implant a sense of pride amongst the people, particularly agriculture students as our agriculture has sustainable practices for generations.</li> <li>• To stimulate scientific research based on traditional technology.</li> </ul>	<p>CO1. Know the basics of the agriculture, till age and evolution of agriculture from different Periods from Vedas to modern agriculture</p> <p>CO2. Observe ancient Agricultural Practices &amp; Its relevance to modern agriculture practices.</p> <p>CO3. Examine Traditional Technical Knowledge.</p> <p>CO4. Discover Our Journey (Developments) in Agriculture and Vision for the Future.</p> <p>CO5. Identify the status of farmers in society.</p>
781	AG 109	Rural Sociology & Educational Psychology	<ul style="list-style-type: none"> <li>• To impart knowledge to the students on sociological and psychological aspects of rural people and to acquaint with some important features of rural society,</li> <li>• To help in devising an agricultural extension plans for farmers.</li> </ul>	<p>CO1. Know the concept of rural sociology, its importance in agricultural extension, and characteristics of Indian rural society.</p> <p>CO2. Discuss social groups, social stratification, culture, social values, social control and attitudes, leadership and training.</p> <p>CO3. Describe about the educational psychology, intelligence, personality, perceptions, emotions, frustration, motivation, teaching and learning.</p> <p>CO4. Create a bridge for understanding and importance of the characteristics of rural society, village institutions and social organizations. Discover lay leaders and train them.</p> <p>CO5. Explain personality types, leadership types and emotions of human beings IV. Organize a training situation under village conditions.</p>
782	AG 110	Human values and Ethics (Non Gradual)**	<ul style="list-style-type: none"> <li>• To know the importance of goal, mission and vision of life.</li> <li>• To know the process of human conduct and human character.</li> <li>• To define the goal and objectives of life.</li> <li>• To develop the heart and cleanse the mind.</li> <li>• To improve the spiritual intelligence.</li> </ul>	<p>CO1. Define the vision of life.</p> <p>CO2. Understand the abilities and preferences and their implications.</p> <p>CO3. Improve the thought process of selecting a logical choice.</p> <p>CO4. Justify accomplishment, success and prosperity.</p> <p>CO5. Improve the social, investigative, artistic, realist, and conventional aspect of life.</p>

## Course Outcomes

S. No.	Course Code	Course Title	Course Objective	Expected Outcome
783	AG 111	NSS/NCC/Physical Education & Yoga Practices( <b>Non Gradual</b> )**	<ul style="list-style-type: none"> <li>• To introduce the basic concept of NSS, Orientation, NSS programmes and activities.</li> <li>• To understand community mobilization, Social harmony and national integration.</li> <li>• To know the family and society values, Volunteerism, shramdan, Citizenship, constitution and human rights.</li> <li>• To understand the role of youth leadership and Life competencies.</li> <li>• To arrange documentation and data report.</li> <li>• To demonstrate the activities directed by the Central and State Government.</li> </ul>	<p>CO1: Know the community in which they work. Evaluate themselves in relation to their community.</p> <p>CO 2: Identify the needs and problems of the community and involve them in problem solving develop among themselves a sense of social and civic responsibility.</p> <p>CO3: Convert their knowledge in finding practical solutions to individual and community problems. Develop competence required for group-living and sharing of responsibilities</p> <p>CO4: Improve skills in mobilizing community participation. Acquire leadership qualities and democratic attitudes</p> <p>CO5: Develop capacity to meet emergencies, natural disasters, practice national integration and social harmony</p>
784	AG 201	Fundamentals of Genetics	<ul style="list-style-type: none"> <li>• To identify the process and purposes of cell cycle.</li> <li>• To solve the genetics transmission problems.</li> <li>• To understand the role of nucleic acid in transport of genetic information.</li> <li>• To understand the functions of cell.</li> </ul>	<p>CO1: Comprehensive, detail understanding of the chemical basis of heredity, specially in crops to impove and develop the new varieties of plants.</p> <p>CO2: Understand the genetic concepts; affect broad societal issues including health, disease, food, natural resources and environmental sustainability.</p> <p>CO3: Know the design, execute, and analyze the results of genetic experimentation in plant system.</p> <p>CO4: Apply the genetic principles to identify the genetic variations in plants.</p> <p>CO5: Understand the role of genetic engineering in the industries, related to biotechnology, pharmaceutical, energy and other fields.</p>

## Course Outcomes

S. No.	Course Code	Course Title	Course Objective	Expected Outcome
785	AG 202	Agricultural Microbiology	<ul style="list-style-type: none"> <li>• To acquaint and enrich the students with the knowledge on basic and applied aspects of microbial inoculants</li> <li>• To impart knowledge about production of beneficial microorganisms and their impact on crop production.</li> <li>• To study the role of microbes in enhancing soil fertility.</li> <li>• To study the use of the microbes in agriculture.</li> </ul>	CO1: Know the basic microbial structure, function and study the comparative characteristics of prokaryotes and eukaryotes. CO2: Discuss the various physical chemical growth factors of bacteria and relate with growth Curve CO3: Relate the various relationships between Plant Pathogens and Host CO4: Discuss the role of important microbes in Carbon cycle, nitrogen cycle, Phosphorus Cycle and Sulpher cycle CO5: Identify and analysis the microbes by using different stain CO6: Isolate microorganism from soil and root of plant.
786	AG 203	Introductory Soil and Water Conservation Engineering	<ul style="list-style-type: none"> <li>• To understand the degradation of productive soil and its effect.</li> <li>• To know the causes of water scarcity and their solution to fight against the evil effects through soil and water conservation technologies.</li> <li>• To provide knowledge about various centrifugal pumps and pressurized irrigation methods.</li> </ul>	CO1 Apply various methods of soil erosion and forms of water erosion, classification of gully control measures or structures. CO2 Knowledge of soil loss equation and it can estimate long - term annual soil loss and guide conservationists on proper cropping, management, and conservation practices. CO3 Demonstrate the contour strip cropping designed to minimize soil erosion and contour bunds which can save soils from erosion. CO4 Understand the grassed waterways designed to move surface water across farmland without causing soil erosion and various water harvesting techniques. CO5 Understand the wind erosion, centrifugal pumps and various pressurized irrigation methods.
787	AG 204	Fundamentals of Crop Physiology	<ul style="list-style-type: none"> <li>• To understand the basic concepts of plant physiology</li> <li>• To know the structure and functions of plant cell</li> <li>• To understand the role of nutrients in plant cell</li> <li>• To understand the metabolism pathways</li> <li>• To understand the plant growth and analysis.</li> <li>• To understand the role of growth hormone</li> </ul>	CO1 Know the role of crop physiology in crop improvement CO2 Identify the deficiency symptoms of nutrients CO3 Know the metabolism pathways. CO4 Calculate plant growth and analysis CO5 Use of growth hormone

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S. No.	Course Code	Course Title	Course Objective	Expected Outcome
788	AG 205	Fundamentals of Agricultural Economics	<ul style="list-style-type: none"> <li>• To acquaint the learner with introductory Agricultural Economics, development. Agriculture in India, use of yield increasing inputs, marketing and prices</li> <li>• To provide students with state-of-the-art knowledge from a multidisciplinary field which integrates topics from agriculture and economics.</li> <li>• To highlight the importance of agriculture in the economic development.</li> <li>• To understand the current developments in the agriculture sector.</li> <li>• To provide a detailed treatment of issues in agricultural economics.</li> </ul>	<p>CO1: Apply economics principles to understand the conduct and performance of the Agricultural industry.</p> <p>CO2: Determine the concept and measurement of price elasticity, income elasticity and cross elasticity.</p> <p>CO3: Understand the macroeconomics aspects of the economy as they affect the agricultural sector. Estimate &amp; investigate critique and evaluate the cost benefits.</p> <p>CO4: Make them aware of the availability of rich natural endowments to achieve sustainable Agricultural development. With this knowledge they can challenge the problems of unemployment inequality, shortage of food production, poverty, and be useful to compete advanced agricultural economics.</p> <p>CO5: Identify elements of business success in agriculture and food-processing as well as elements that determine economic role of agriculture in national economy. Different financial sources are known to the students and they can act as a good banker for farmers.</p>
789	AG 206	Fundamentals of Plant Pathology	<ul style="list-style-type: none"> <li>• To acquaint with different strategies for disease management.</li> <li>• To know the epidemiological factors for disease development.</li> <li>• To know about plant disease forecasting.</li> </ul>	<p>CO1 Discuss about concepts of plant pathogens, major disease causing organisms and their etiology.</p> <p>CO2 Provide specific knowledge about host pathogen interactions.</p> <p>CO3 Identify the plant disease in the initial stage.</p> <p>CO4 Give specific knowledge about environment and disease development in plant.</p> <p>CO5 Give specific knowledge about fungicides and their formulations and calculation of fungicide spray concentration.</p>

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S. No.	Course Code	Course Title	Course Objective	Expected Outcome
790	AG 207	Fundamentals of Entomology	<ul style="list-style-type: none"> <li>• To know about fundamental concepts and information about Phylum Arthropoda and its classes.</li> <li>• To understand basic insect morphology and biology for effective pest management.</li> <li>• To have a deeper understanding of several aspects of taxonomy and binomial nomenclature of agricultural importance related insect orders.</li> </ul>	<p>CO 1: Observe the morphological characteristics, feeding habit and habitat of agriculturally important insect-pest.</p> <p>CO 2: Apply concepts and analytical approaches in evolutionary biology, genetics and other areas of insect biology of the student's choice.</p> <p>CO 3: Categorize insects based on basic ecological, behavioural, morphological, physiological, or developmental attributes.</p> <p>CO 4: Examine insects deeply within a biological level of analysis and make strategies for successful pest management strategy.</p> <p>CO 5: Understand about different families and orders of class Insecta which cause economic losses to human beings.</p>
791	AG 208	Fundamentals of Agricultural Extension Education	<ul style="list-style-type: none"> <li>• To provide the farmers the knowledge and help that will enable him to farm more efficiently and to increase his income.</li> <li>• To help in planning and implementing the family and village plans for increasing production in various occupations</li> <li>• To provide facilities for better family living.</li> <li>• To encourage the farmer to grow his own food. Eat well and living well.</li> <li>• To promote better social, natural, recreational, intellectual and spiritual life among the people.</li> </ul>	<p>CO1: Know about the Education, types of education, Extension Programme planning Meaning, Process, Principles and Steps in Programme Development.</p> <p>CO2: Discuss about the Extension systems in India: Extension efforts in Pre-independence era. Know how to use of audio visual equipment's.</p> <p>CO3: Recognize the new trends in agriculture extension: privatization extension. Able to create a news story, able to make a news and use of community radio.</p> <p>CO4: Demonstrate of some activity with the help of AV aids so that students can use the aids and enhance their skill in different areas.</p> <p>CO5: Formulate a group and assign to organize a small programme.</p>

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S. No.	Course Code	Course Title	Course Objective	Expected Outcome
792	AG 209	Communication Skills and Personality Development	<ul style="list-style-type: none"> <li>• To know the value of communication in personal &amp; professional success.</li> <li>• To Develop awareness and Adapt appropriate communication strategies.</li> <li>• To Justify and Illustrate messages with a specific intent.</li> <li>• To Explain and evaluate the use of primary academic writing associated with the communication discipline</li> <li>• To Describe and apply knowledge of human communication and language processes as they occur across various contexts.</li> </ul>	<p>CO1: Development of all-round personalities with mature outlook to function effectively in different circumstances.</p> <p>CO2: Design broad career plans, evaluate the employment market, identify the organizations to get good placement, match the job requirements and skill sets.</p> <p>CO3: Take part effectively in various selection procedures adopted by the recruiters.</p> <p>CO4: Conduct effective business correspondence and prepare a business report which produces results.</p> <p>CO5: Generate self-confidence individuals by mastering inter-personnel skills, team management skills, and leadership skills.</p>
793	AG 301	Crop Production Technology – I ( <i>Kharif</i> crops)	<ul style="list-style-type: none"> <li>• To acquaint the students with the economic importance of major kharif crops.</li> <li>• To know the impact of different soil and climatic parameters in relation to crop production.</li> <li>• To transmit the technical knowhow / production technology of major kharif crops.</li> <li>• To demonstrate the practical field exercise for different crops i.e. seed bed / nursery preparation, transplanting sowing, weeding, manuring, irrigation and harvesting etc.</li> <li>• To identify the kharif crops weeds, characteristics, and their control management.</li> </ul>	<p>CO1: Know about origin, geographical distribution and economic importance of Kharif crops</p> <p>CO2: Know about Soil and climatic requirements, varieties, cultural practices and yield of Kharif crops.</p> <p>CO3: Demonstrate the comparative benefits of the different kharif crops</p> <p>CO4: Identify the constraints in production of oilseeds and pulses.</p> <p>CO5: Understand the production technology of kharif cereals and millets to fulfill the need of human consumption and milch cattle.</p>
794	AG 302	Fundamentals of Plant Breeding	<ul style="list-style-type: none"> <li>• To get the higher crop yield.</li> <li>• To improve the quality of crops.</li> <li>• To develop resistant varieties.</li> <li>• To develop the early maturity varieties.</li> </ul>	<p>CO1 Understand the selection, its methods and utilize them to improve and develop crop varieties.</p> <p>CO2 Apply and utilize the genetic principles of heredity to improve the genotype of crops.</p> <p>CO3 Apply the plant breeding methods to develop resistant and high nutritive varieties.</p> <p>CO4 Increase the farm yield to get higher income on farm by developing highly yielding crop varieties.</p> <p>CO5 Identify and evaluate the crops genotype to improve their characters.</p>

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S. No.	Course Code	Course Title	Course Objective	Expected Outcome
795	AG 303	Agricultural Finance and Co-Operation	<ul style="list-style-type: none"> <li>• To promote the development of agriculture and increase the agricultural production.</li> <li>• To make students proficient in concepts and techniques of agricultural financial management.</li> <li>• To priority sector, credit management and financial risk management. ct.</li> <li>• To expose the students to the various kinds of risk in farming, risk management strategies and mechanisms and insurance policies.</li> </ul>	<p>CO1: Explain the broad features of Indian financial institutions with its apex banks' objectives and purview. Also understand the instruments to control credit in the country.</p> <p>CO2: Effectively narrate the kinds and components of money with its regulatory system. Apply economics principles to understand the conduct and performance of the agricultural industry</p> <p>CO3: Identify the existence and development of non-banking financial institutions; know the important role of mutual fund, LIC investment companies etc. Utilize and effectively participate in the development process.</p> <p>CO4: Students came to know different banking principles and procedures. Students visited different financial institutions viz., commercial banks, cooperative societies, RRBs, LDBs etc and they gained the practical banking knowledge.</p> <p>CO5: Demonstrate the role and significance of foreign exchange rate and its markets with its impact on various sectors in the economy.</p>
796	AG 304	Agricultural Informatics	<ul style="list-style-type: none"> <li>• To impart the basic concepts of computer systems and all about it.</li> <li>• To understand the concepts about MS office learning.</li> <li>• To understand basic concepts about programming languages, Use ICT in agriculture, DSS and expert systems.</li> <li>• To understand the Computer Models for understanding plant processes</li> </ul>	<p>CO1: Understand analogy of computer</p> <p>CO2: Basic knowledge of MS Office</p> <p>CO3: Some basic knowledge of Internet and WWW</p> <p>CO4: Use of IT application and different IT tools in Agriculture</p> <p>CO5: Use of Decision support systems, Agriculture Expert System and Soil Information Systems in Agriculture</p>

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797	AG 305	Farm Machinery and Power	<ul style="list-style-type: none"> <li>• To understand the concepts of farm power</li> <li>• To understand the engines used in farm power</li> <li>• Get familiarize with tractor, its parts and functionaries</li> <li>• To understand various implements used at agriculture farm</li> </ul>	CO1: Recognize various sources of farm power and compare them CO2: Explain the working of IC Engines and their uses in modern equipments CO3: Describe various parts of tractors and evaluate the financial mechanism CO4: Estimate the capacity and requirements of using farm implements CO5: Explain the various implements used in agriculture farm for various purposes
798	AG 306	Production Technology for Vegetables and Spices	<ul style="list-style-type: none"> <li>• To know the physiological growth and development of vegetables and spices.</li> <li>• To impart knowledge about production technology of vegetables and spices.</li> <li>• To educate production technology of Leafy vegetable.</li> </ul>	CO1: Understand the practical knowledge on specialized production techniques of vegetables and spices. CO2: Understand the importance of vegetables & spices in human nutrition improved and national economy. CO3: Apply the knowledge of quality requirement, production and techniques for export. CO4: Managing skill for solving field problems and layout preparation. CO5: Describe the kitchen gardening and their use.
799	AG 307	Environmental Studies and Disaster Management	<ul style="list-style-type: none"> <li>• To prepares students for careers as leaders in understanding and addressing complex environmental issues.</li> <li>• To prepare a problem-oriented, interdisciplinary perspective, apply systems concepts and methodologies.</li> <li>• To analyze and understand interactions between social and environmental processes.</li> </ul>	CO1 Undersatnd and evaluate the basic environmental concepts, methods and scopes. And to prepare students for analyzes environmental issues. CO2 Create and apply applications of environmental problem solving. CO3 Understand the basic concepts of pollution and waste management processes and evaluate their management. CO4 Create and apply pollution control methods for socity. CO5 Understand the ecological balance and apply methods for disaster management.

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S. No.	Course Code	Course Title	Course Objective	Expected Outcome
800	AG 308	Statistical Methods	<ul style="list-style-type: none"> <li>• To know the concepts of statistical methods and statistical inference.</li> <li>• To understand the concepts of data presentation, analysis and interpretation.</li> <li>• To understand the calculation of probability distributions, parameter estimation, tests of significance, regression and multivariate analytical techniques.</li> </ul>	<p>CO1 Acquaintance with some basic concepts in statistics.</p> <p>CO2 Making familiar with some elementary statistical methods of analysis of data viz. measures of central tendency, dispersion, moments, skewness, and kurtosis and to interpret them.</p> <p>CO3 Analysis of data pertaining to attributes and to interpret the results.</p> <p>CO4 Study and implementation of sampling theory to make decisions.</p>
801	AG 309	Livestock and Poultry Management	<ul style="list-style-type: none"> <li>• To impart high quality education to students with an understanding of and ability to apply fundamental principles of livestock production and poultry management</li> <li>• To develop knowledge of animal husbandry including various livestock species viz.cattle,buffer,goat and poultry.</li> <li>• To apply this knowledge to advance resource efficient and environmentally sound animal and poultry management technologies.</li> </ul>	<p>CO-1 Develop and evaluate animal production and management systems by integrating knowledge of animal genetics, nutrition and reproduction.</p> <p>CO-2 Locate, critically evaluate, and apply information from scholarly animal science literature and other sources to expand personal understanding and knowledge of animal sciences, providing a foundation for lifelong learning.</p> <p>CO-3 Create and interpret graphs, tables and diagrams illustrating scientific data and understand basic concepts relating to the design and analysis of research in the animal sciences.</p> <p>CO-4 The application of scientific principles to animal breeding, reproduction, feeding, growth and development, health management, housing, and handling.</p> <p>CO-5 Judging of animal and poultry and formulation of concentrate mixtures.</p> <p>CO-6 This course imparts knowledge of external body parts and practice of handling restraining and identification of farm animals and poultry.</p>

## Course Outcomes

S. No.	Course Code	Course Title	Course Objective	Expected Outcome
802	AG 401	Crop Production Technology – II ( <i>Rabi</i> crops)	To know the Origin, geographical distribution, economic importance and package of production of major Rabi crops.	<p>CO1: Know the Origin, geographical distribution, economic importance, soil and climatic requirements, varieties, cultural practices and yield of rabi crops .</p> <p>CO2: Identify weeds in rabi season crops. For Examples Pulses-chickpea, lentil, peas; oilseeds-rapeseed, mustard and sunflower; sugar crops-sugarcane, Medicinal and aromatic crops-mentha, lemon grass and citronella, Forage crops-berseem, lucerne and oat.</p> <p>CO3: Know about irrigation scheduling in rabi crops, additional area can be increased of low water requiring crops.</p> <p>CO4: Know about the economic importance of medicinal and Aromatic crops in present sphere.</p> <p>CO5: Visit and demonstrate research stations of related crops.</p>
803	AG 402	Production Technology for Ornamental Crops, MAP and Landscaping	• To impart comprehensive knowledge about the production technology of ornamental medicinal and aromatic crops and landscaping.	<p>CO1: Know the importance of ornamental, medicinal and aromatic crops.</p> <p>CO2: Understand and adapt the scientific cultivation methods of different ornamentals crops like Rose, Gaillardia, Gladiolus, Tuberose and Chrysanthemum.</p> <p>CO3: Understand and create the scientific cultivation methods of medicinal crops like ashwagandha, senna, isabgol and goggle.</p> <p>CO4: Know and classify more about origin, area, climate, soil, improved varieties and cultivation practices such as time and methods of sowing, transplanting techniques, planting distance, fertilizer requirements, irrigation, weed management, harvesting and yield.</p> <p>CO5: Identify and experiment the aromatic and know about landscaping and its features.</p>

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S. No.	Course Code	Course Title	Course Objective	Expected Outcome
804	AG 403	Renewable Energy and Green Technology	<ul style="list-style-type: none"> <li>• To learn about various renewable energy sources</li> <li>• To understand the uses of various biofuels</li> <li>• To impart knowledge about solar energy and gadgets</li> <li>• To understand the use of wind energy</li> </ul>	<p>CO1: Know the concept and the role of renewable sources in agriculture sector.</p> <p>CO2: Describe and understand the bio fuel production and their applications in today's world.</p> <p>CO3: Demonstrate and understand and utilizing the solar energy in various aspects.</p> <p>CO4: Discuss about all the solar gadgets and biogas plant, wind energy, conventional and non-conventional energy.</p> <p>CO5: Compose a solar energy system for future opportunity and examine solar photovoltaic system: solar light, solar pumping.</p>
805	AG 404	Problematic soils and their Management	<ul style="list-style-type: none"> <li>• To know distribution of problem soils in different agro climatic zones in India.</li> <li>• To find out various problems in Saline , sodic , Acidic, Flooded and Compact soil .</li> <li>• Management of various problematic soil</li> <li>• Quality, standards and utilization of saline water in agriculture.</li> </ul>	<p>CO 1: To examine soils health.</p> <p>CO 2: To understand severity of Salinity, Alkalinity, Acidity, flooded and Compactness of soil.</p> <p>CO 3: Management practices to improve physical and chemical properties of problematic soil.</p> <p>CO 4: Soil Survey through Remote Sensing and GIS techniques.</p> <p>CO 5: Utilization of Land through Land capability and suitability class.</p>
806	AG 405	Production Technology for Fruit and Plantation Crops	<ul style="list-style-type: none"> <li>• To enhance massive production of fruit and plantation crops.</li> <li>• To learn the propagation methods in fruit crops.</li> <li>• To impart knowledge about production technology of fruit and plantation crops.</li> <li>• To understand production technology of Plantation crops.</li> </ul>	<p>CO1: Know the importance of different fruit crops and plantation crops.</p> <p>CO2: Discuss and identify the fruit and plantation crops.</p> <p>CO3: Describe package of practices and its use for the major crops like mango, banana, guava, lemon, pineapple, coffee, coconut and rubber.</p> <p>CO4: Describethe concept of high density planting in different fruit crops to improve the yield per unit area</p> <p>CO5: Define and enlist bio-regulators and their uses.</p>

## Course Outcomes

S. No.	Course Code	Course Title	Course Objective	Expected Outcome
807	AG 406	Principles of Seed Technology	<ul style="list-style-type: none"> <li>• To know the maintenance of crop varieties in its pure form.</li> <li>• To learn the mass production of quality seed.</li> <li>• To know the seed storage methods.</li> <li>• To know the seed certification process and its distribution in the market.</li> </ul>	<p>CO1 Know the seed production program for full fill the requirement of quality seed in market and increase the farm income.</p> <p>CO2 Understand the storage methods of pure variety seed to solve the availability crises of pure variety seed due to adverse environmental conditions.</p> <p>CO3 Produce and distribute the disease free seed in the market to get the environment friendly cultivation of crops.</p> <p>CO4 Understand the seed quality to increase the farm income by producing high yielding, disease free quality seed and decrease the cost of cultivation also.</p> <p>CO5 Know the hybrid seed production program of different crops to increase the farm income.\\</p>
808	AG 407	Farming System & Sustainable Agriculture	<ul style="list-style-type: none"> <li>• To acquaint the student from agricultural as well as other disciplines with conventional and alternative agricultural practices throughout the world and their effect on long-term sustainability and environmental quality.</li> <li>• To show how agriculture scientists are using methods to minimize agricultural pollution and sustain food production adequate for the world's population.</li> </ul>	<p>CO1 Know the major problems in Indian agriculture and summarize farming system components.</p> <p>CO2 Evaluate the different cropping system.</p> <p>CO3 Explain about sustainable agriculture and recommend use of low external inputs in agriculture.</p> <p>CO4 Determine the different agricultural allied enterprises in India.</p> <p>CO5 Formulate different farming system according to climatic conditions and demonstrate integrated farming system model.</p>

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S. No.	Course Code	Course Title	Course Objective	Expected Outcome
809	AG 408	Agricultural Marketing, Trade & Prices	<ul style="list-style-type: none"> <li>• To imparting knowledge of agriculture marketing, different systems, price analysis and trades, financepolicy in Agriculture.</li> <li>• To providing efficient services in the transfer of farm products and inputs from producers to consumers.</li> <li>• To provide an efficient marketing system to minimize costs, and benefits all the sectionsof the society.</li> </ul>	<p>CO-1 Able to observe the Optimization of Resource use and Output Management: An efficient agriculturalmarketing system leads to the optimization of resource use and output management. An efficient marketing system can also contribute to an increase in the marketable surplus by scaling down the losses arising out of inefficient processing, storage and transportation. A well-designed system of marketing can effectively distribute the available stock of modern inputs, and thereby sustain a faster rate of growth in the agricultural sector.</p> <p>CO-2 Able to explain how to increase the Farm Income: An efficient marketing system ensures higher levels of income for the farmers by reducing the number of middlemen or by restricting the commission on marketing services and the malpractices adopted by them in the marketing of farm products.</p> <p>CO-3 Able to know the Growth of Agro-based Industries: An improved and efficient system of agricultural marketing helps in the growth of agro-based industries and stimulates the overall development process of the economy. Many industries depend on agriculture for the supply of raw materials.</p> <p>CO-4 Able to adapt and Spread of New Technology: The marketing system helps the farmers in the adoption of new scientific and technical knowledge. New technology requires higher investment and farmers would invest only if they are</p>

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S. No.	Course Code	Course Title	Course Objective	Expected Outcome
810	AG 409	Introductory Agrometeorology & Climate change	<ul style="list-style-type: none"> <li>• To monitor agricultural droughts on crop-wise for effective drought management.</li> <li>• To develop weather based agro advisories to sustain crop production.</li> <li>• To understand various types of weather forecast and seasonal climate forecast.</li> <li>• To study about Climate change, climatic variability, global warming.</li> </ul>	<p>CO 1. Understand the role of agrometeorology in agriculture and its relation to other areas of agriculture to acquaint with recent developments in Agrometeorology.</p> <p>CO 2. Know about relationship of climate with agriculture science.</p> <p>CO 3. Calculate the different weather parameters.</p> <p>CO 4. Utilize various types of weather forecast and seasonal climate forecast to develop weather based agro advisories for sustaining the crop production.</p> <p>CO 5. Understand the basic fundamentals of Agro meteorological Observatory, exposure of instruments and weather data recording.</p>
811	AG 410A	Protected Cultivation	<ul style="list-style-type: none"> <li>• To get better quality products from Green House.</li> <li>• To understand water management resources.</li> <li>• To know surface cover cultivation.</li> <li>• To get the knowledge of Organic Farming-Vermi Bed</li> <li>• To know the importance of plastic films, water pond and Reservoir lined.</li> </ul>	<p>CO1 Adapt green house technology, its type and construction process.</p> <p>CO2 Understand the mechanism of Green house equipments, and its Irrigation System.</p> <p>CO3 Choose Agro shade nets for Horticulture purpose.</p> <p>CO4 Know the concept of Plant protection nets.</p> <p>CO5 Apply the concept of vermiculture preparation.</p>
812	AG 410B	Agribusiness Management	<ul style="list-style-type: none"> <li>• To help to take policy decisions in the field of agricultural marketing.</li> <li>• To understand various appraisal techniques in project with reference to agricultural products, agricultural credit management, financial risk management.</li> <li>• To orient towards agricultural entrepreneurship.</li> <li>• To study &amp; analysis of agro-based industries.</li> </ul>	<p>CO1- Know the fundamental marketing principles, role of marketing, marketing mix and observe the marketing problems dealt with by managers.</p> <p>CO2 - Recognize the various marketing channels and areas and means to develop business ventures</p> <p>CO3 - Assemble knowledge about organization and functioning of different institutions involved in agriculture marketing</p> <p>CO4 - Evaluate the project feasibility and encourage them to start new ventures.</p> <p>CO5 - Evaluate the Co-operatives in Agricultural Marketing.</p>

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S. No.	Course Code	Course Title	Course Objective	Expected Outcome
813	AG 410C	Agrochemicals	<ul style="list-style-type: none"> <li>• To know about history, concept, importance and scope of agro-chemicals and its effect on environment.</li> <li>• To provide knowledge of storage, quality control and marketing of these products which are low cost.</li> <li>• To introduce and classify the insecticide and botanicals and their effect on pest population.</li> </ul>	<p>CO1 Describe the agro-chemicals and their effect on environment, soil, human and animal health.</p> <p>CO2 Demonstration of pesticides application technology and study about various pesticides appliances.</p> <p>CO3 Discuss the role of agro-chemical in quality parameters of various agricultural products and key role of bio-fertilizer in maintain soil health.</p> <p>CO4 Determination of N, P<sub>2</sub>O<sub>5</sub> and K in Urea, SSP and Muraite of Potash.</p> <p>CO5 Formulation of different insecticide, fungicide, fertilizers and complex fertilizers.</p>
814	AG 410D	Commercial Plant Breeding	<ul style="list-style-type: none"> <li>• To get the higher crop yield.</li> <li>• To improve the quality of crops.</li> <li>• To develop the resistant varieties.</li> <li>• To develop the early maturity crop varieties.</li> </ul>	<p>CO-1 Apply the plant breeding method to develop resistant and high nutritive varieties.</p> <p>CO-2 Identification and evaluation of crop genotype to improve the crops.</p> <p>CO-3 Know the gene preservation method for further use for improving Rabi varieties.</p> <p>CO-4 Identification and evaluation of resistance gene, related to Rabi crop with high yield potential against Pest and pathogen.</p> <p>CO-5 Know hybrid seed production methods for increase the crop yield.</p>
815	AG 411	Educational Tour ( <b>Non Gradial</b> )**	<p>To know the education/ types of education in different institutes.</p> <p>To recognize the location specific new trends in agriculture.</p>	<p>CO1: Know about the education, types of education in different institutes.</p> <p>CO2: Recognize the location specific new trends in agriculture.</p>

## Course Outcomes

S. No.	Course Code	Course Title	Course Objective	Expected Outcome
816	AG 501	Principles of Integrated Pest and Disease Management	<ul style="list-style-type: none"> <li>• To acquaint with different strategies for disease and pest management.</li> <li>• To know the factors for disease development and pest establishment in Field.</li> <li>• To know about methods for forecasting of Pest attack and disease incidence.</li> </ul>	CO1 Identify and analysis the sign and symptoms for detection of pathogens and Pest. CO2 Apply integrated methods of disease and pest management. CO3 Design IPM Modules and check the validation of the Modules CO4 Demonstrate IDM and IPM modules of wheat, rice, groundnut, mustard potato,cumin, citrus and chickpea diseases. CO5 Formulate Trichoderma, NPV, Pseudomonas etc
817	AG 502	Manures, fertilizers and Soil Fertility Management	<ul style="list-style-type: none"> <li>• To understand importance of organic manure, fertilizer and essential plant nutrients in relation to plant growth and crop production.</li> <li>• Criteria of essentiality of nutrients, available form of nutrients in soil, role, deficiency and toxicity symptoms of essential plant nutrients</li> <li>• Mechanisms of nutrient transport to plants, factors affecting nutrient availability to plants.</li> </ul>	CO 1: Demonstrate importance of organic manures and its methods of preparation. CO 2: Classify major nitrogenous, phosphatic, potassic, secondary and micronutrient fertilizers. CO 3: Learn fertilizer storage techniques and apply fertilizer control order. CO 4: Student will understand the criteria of essentiality, role, deficiency and toxicity symptoms of essential plant nutrients. CO 5: Describe method of fertilizer recommendations to crops. CO 6: Student can determine fertility status of soil.

## Course Outcomes

S. No.	Course Code	Course Title	Course Objective	Expected Outcome
818	AG 503	Pests of Crops and Stored Grains and their Management	<ul style="list-style-type: none"> <li>• To identify the different harmful insect pest of field, horticulture, ornamentals, vegetables and stored grains.</li> <li>• To know about distribution, host range, biology and nature of damage and assessment of pest population in field.</li> <li>• To manage harmful insect pests through integrated pest management approach with no side effect on environment, plant and animal health.</li> </ul>	<p>CO1: Identification of different insect pest of field, horticulture, ornamentals, vegetables and stored grains illustrate at the field level.</p> <p>CO 2: Describe how insects affect animal, Plant health and agricultural production and safely manipulate populations of beneficial and destructive species below ETL.</p> <p>CO 3: Explain the biology, diversity, distribution and survey of insect-pest and their relationships to crop and the environment condition of a particular area.</p> <p>CO 4: Understand the nature of damage and symptoms caused by the pest and able to apply suitable technique of pest management.</p> <p>CO 5: Recommend the suitable approach of Integrated Pest Management without side effect on plant, animal and environment health.</p>
819	AG 504	Diseases of Field and Horticultural Crops and their Management-I	<ul style="list-style-type: none"> <li>• To impart knowledge of plant pathogens</li> <li>• To aware about symptoms of field and horticultural crops.</li> <li>• To acquaint dispersal of these diseases by means of primary and secondary spread.</li> </ul>	<p>CO1 To know the common pathogens of different kharif diseases.</p> <p>CO2 To acquire the knowledge about etiology, and symptoms of diseases in kharif Plants</p> <p>CO3 To Trace the diseases Cycle of different Pathogens in Kharif Season.</p> <p>CO4 To learn utilizing different control methods for different diseases.</p> <p>CO5 To identify the diseases of various diseases in field and Culture In the lab</p> <p>CO6 Student will learn collection method in field and Preserving Method of diseases sample in lab</p>

## Course Outcomes

S. No.	Course Code	Course Title	Course Objective	Expected Outcome
820	AG 505	Crop Improvement-I ( <i>Kharif crops</i> )	<ul style="list-style-type: none"> <li>• To provide training of breeding methods in field.</li> <li>• To creates abilities to evaluate resistant varieties with breeding practices on the field.</li> <li>• To provide field training for observe and classify the field crop on basis of phenotypes and genotypes.</li> </ul>	<p>CO1: Understand the importance of wild relative and utilize them to produce new varieties of kharif crop.</p> <p>CO2: Knowledge of gene preservation method for further use to improve kharif crops.</p> <p>CO3: Apply the breeding method to improve and develop the kharif crops.</p> <p>CO4: Identify and evaluate of resistance gene relate to kharif crop with high yield potential against Pest and pathogen and utilization of genetic informations.</p> <p>CO5: Understand the new genetic approaches to achieve a definite ideotype of khaif crop.</p>
821	AG 506	Entrepreneurship Development and Business Communication	<p>To understand the basic concepts in the area of entrepreneurship.</p> <ul style="list-style-type: none"> <li>• To discover the role and importance of entrepreneurship for economic development.</li> <li>• To understand different skills requires for entrepreneurial development.</li> <li>• To understand the concept of Supply Chain Management and Total Quality Management for business growth.</li> <li>• To know the process for project planning and formulation</li> </ul>	<p>CO1 Understand the concepts of entrepreneurship.</p> <p>CO2 Describe the role and importance of entrepreneurship.</p> <p>CO3 Relate different skills for entrepreneurship development.</p> <p>CO4 Understand and apply the concept of supply chain management and total quality management to agri entrepreneurship.</p> <p>CO5 Demonstrate the process of project planning and formulation.</p>

## Course Outcomes

S. No.	Course Code	Course Title	Course Objective	Expected Outcome
822	AG 507	Geoinformatics and Nanotechnology and Precision Farming	<ul style="list-style-type: none"> <li>• To study about the concepts, techniques, tools and definition of Precision Farming.</li> <li>• To understand crop discrimination, yield monitoring, soil mapping and fertilizer recommendation using geospatial technologies.</li> <li>• To study about concepts and techniques of Nanotechnology.</li> </ul>	<p>CO1: Know about precision agriculture and its relation between economical and environmental issues that affects the productivity of agriculture.</p> <p>CO2: Show how employer characteristics and decision-making at various levels enhance the success of an agricultural enterprise.</p> <p>CO3: Understand the consequences of applying imbalanced doses of farm inputs like irrigation, fertilizers, insecticides and pesticides.</p> <p>CO4: Encourage the farmers to study of spatial and temporal variability of the input parameters using primary data and all calculations at field.</p> <p>CO5: Evaluate the impact of globalization and diversity in modern agriculture.</p>
823	AG 508	Practical Crop Production – I ( <i>Kharif</i> crops)	<ul style="list-style-type: none"> <li>• To impart practical oriented knowledge to the students to plan and raise kharif crops of the region.</li> <li>• To guide students to carry out all the operations required for crop production from field preparation, sowing to harvesting, threshing, drying, winnowing, packaging of produce for marketing or storage.</li> <li>• To acquire skill by the students in weed, insect-pest and disease management.</li> </ul>	<p>CO1:- Knowledge to plan for profitable crop production.</p> <p>CO2: - Practical knowledge of remunerative crop production techniques.</p> <p>CO3:- Understand the cropping sequence followed under the prevailing climatic conditions and available resources for sustainable agriculture.</p> <p>CO4:- Calculate the cost of cultivation, B: C ratio and net return</p> <p>CO5:- Prepared of balance sheet including cost of cultivation, net returns</p>

## Course Outcomes

S. No.	Course Code	Course Title	Course Objective	Expected Outcome
824	AG 509	Intellectual Property Rights	<ul style="list-style-type: none"> <li>• To acquaint the students with basics of intellectual property rights with special reference to agricultural crop research.</li> <li>• To encourage and protect innovation in the form of intellectual property rights.</li> <li>• To provide a superior environment to students for commercialization of intellectual property.</li> <li>• To encourage research, scholarship, and a spirit of inquiry, thereby generating new knowledge.</li> <li>• To know about role of World Trade Organization in global trade.</li> <li>• To know about protection of plant varieties under UPOV and PPV&amp;FR Act of India.</li> </ul>	<p>CO1: Describe the concept of intellectual property rights.</p> <p>CO2: Procedural knowledge to legal system and solving the problem relating to intellectual property rights.</p> <p>CO3: Discuss the professional programs in company secretary ship, law, business, agriculture, international affairs, public administration and other fields.</p> <p>CO4: Understand the working nature of compliance officer, public relation officer, liaison officer etc.</p> <p>CO5: Explain the establishment of legal consultancy and service provider.</p>
825	AG 510A	Agricultural Journalism	<ul style="list-style-type: none"> <li>• To understand the role of communication in personal &amp; professional success.</li> <li>• To develop awareness of appropriate communication strategies.</li> <li>• To prepare and present messages with a specific intent.</li> <li>• To analyze a variety of communication acts.</li> <li>• To ethically use, document and integrate sources.</li> </ul>	<p>CO1 Know about basics of agricultural journalism.</p> <p>CO2 Understand the difference between different types of journalism.</p> <p>CO3 Apply their knowledge in communication media.</p> <p>CO4 Improve readability measures.</p> <p>CO5 Develop better sources of agriculture information.</p>
826	AG 510B	Landscaping	<ul style="list-style-type: none"> <li>• To impart knowledge about the cultivation aspects of ornamental crops, medicinal, aromatic plants and landscaping.</li> </ul>	<p>CO1: Identify metrological instruments and understand the diversity within the profession of Floriculture following safety precautions.</p> <p>CO2: Identify the Plant morphology, different plant varieties and plant families.</p> <p>CO3: Identify and select different propagation methods, Handling of seed, bulbs, cut flowers, Nursery plants, pot plants.</p> <p>CO4: Plan and execute Survey for landscaping and various types of indoor gardening.</p>

## Course Outcomes

S. No.	Course Code	Course Title	Course Objective	Expected Outcome
827	AG 510C	Food Safety and Standards	<ul style="list-style-type: none"> <li>• To enhance the health of soil, plants, animals and humans as one and indivisible. Organic farming should be based on the living ecological systems and cycles, work with them, emulate them and help sustain them</li> </ul>	CO1 Describe Initiative from Government for organic produce. CO2 Illustrate Role of NGOs in producing organic products. CO3 Examine of the Selection of crops and varieties for organic produce CO4 Discuss about Recent concerns- New and Emerging Pathogens. and contract Packaging, Product labeling and Nutritional labeling. Genetically modified foods\ transgenic.Certification of organic produce. CO5 Discuss and Demonstrate the Pest management by means of organic resources.
828	AG 510D	Biopesticides & Biofertilizers	<ul style="list-style-type: none"> <li>• To know about history, concept, importance, scope of Bio-pesticide and Bio-Fertilizers.</li> <li>• To provide knowledge of storage, quality control and marketing of these products which are low costing.</li> <li>• To know the mass production technique of these Bio-control agents and Bio-fertilizers at large scale.</li> </ul>	CO1: To adaptation of bio-pesticides and Bio-fertilizers in place of chemical fertilizers for sustainable development of agriculture. CO2: Description of mass production technique of bio-fertilizers and bio-pesticide in laboratory. CO3: Survey for identification of bio-control agents present in field condition and in bio-pesticide laboratory. CO4: Justify recommendation of bio-pesticide and bio-fertilizers to farmers for better pest control and maintain the soil health. CO5: Observe the effect of bio-pesticide on pest population and bio-fertilizers on soil health.
829	AG 601	Rainfed Agriculture & Watershed Management	<ul style="list-style-type: none"> <li>• To be acquainted with the meaning, concept and importance of Rainfed Agriculture and watershed management.</li> <li>• To highlight the problems and prospects of rainfed agriculture in India.</li> <li>• To study the impact of drought types in crop production.</li> <li>• To be familiar with climate classification and rainfed pattern in rainfed areas of country.</li> <li>• To study the different watershed/water harvesting /structures used in rainfed areas.</li> </ul>	CO1: Know the basic concepts and impact of rainfed agriculture. CO2: Know the influence of rainfall and its pattern in crop production. CO3: Learn about climate behavior with respect to agriculture. CO4: Protect the crops under adverse condition of famine/draught situations. CO5: Acquire the knowledge of various water harvesting devices i.e. Anicut Dams, khadin, farm pond, and water storage tanks etc.

## Course Outcomes

S. No.	Course Code	Course Title	Course Objective	Expected Outcome
830	AG 602	Protected Cultivation and Secondary Agriculture	<ul style="list-style-type: none"> <li>• To understand Green house its types, design and environment.</li> <li>• To know the irrigation system, equipments used in green houses.</li> <li>• To provide knowledge of cost estimation analysis, engineering properties in PHT design and operations.</li> <li>• To acquaint with drying methods and moisture measurement.</li> <li>• To inform material handling equipments :conveyer and elevators</li> </ul>	<p>CO1 Develop concept of greenhouse technology, types of green houses and construction of green houses.</p> <p>CO2 Create knowledge of Green house equipment's and its Irrigation System.</p> <p>CO3 Discuss Engineering properties and hydro dynamic properties of pulses, oilseeds and cereals.</p> <p>CO4 Assess drying and dehydration method.</p> <p>CO5 Discuss the material handling equipments their working and principles.</p>
831	AG 603	Diseases of Field and Horticultural Crops and their Management-II	<ul style="list-style-type: none"> <li>• To impart knowledge of plant pathogens</li> <li>• To aware about symptoms of field and horticultural crops.</li> <li>• To acquaint dispersal of these diseases by means of primary and secondary spread.</li> </ul>	<p>CO1: Idetify pathogens of different Rabi diseases in feild.</p> <p>CO2: Acquire the knowledge about etiology, and symptoms of diseases in Rabi Plants</p> <p>CO3: Trace the diseases Cycle of different Pathogens in Rabi Season.</p> <p>CO4: By knowing means of dispersal Rabi diseases suitable management methods can be applied.</p> <p>CO5: Examine the pathogen under microscope.</p> <p>CO6: Acquire Knowledge of Collecting in field and preserving different diseases sample in lab</p>
832	AG 604	Post-Harvest Management and Value Addition of Fruits and Vegetables	<ul style="list-style-type: none"> <li>• To understanding environment, growth parameter, causes of post harvest losses, management and value addition.</li> <li>• To providing employment, often in rural areas.</li> <li>• To know about the food processing and packaging.</li> </ul>	<p>CO1: Know the post harvest technology of horticultural crops.</p> <p>CO2: Know preservation and value addition of horticulture crops.</p> <p>CO3: Explain the work space, tool and equipment design and its uses for PHT and value addition.</p> <p>CO4: Describe the various certification and accreditation i.e. FPO, ISO and other leveling.</p> <p>CO5: Explain the different types of packing</p>

## Course Outcomes

S. No.	Course Code	Course Title	Course Objective	Expected Outcome
833	AG 605	Management of Beneficial Insects	<ul style="list-style-type: none"> <li>• To know about importance, major species and biology of beneficial insects.</li> <li>• To understand commercial methods of rearing and management of beneficial insects</li> <li>• To control the insect pest and diseases of apiculture, sericulture and lac culture and their management.</li> <li>• To understand about mass production technique and field release of biological control agents to suppress the pest population.</li> </ul>	<p>CO 1: Adopt the apiculture, sericulture and lac culture as an entrepreneur according to agro climatic zone.</p> <p>CO 2: Apply commercial methods of rearing, equipment, seasonal management, insect-pest and disease and important species for commercial use of honey bee, silkworm and lac insect.</p> <p>CO 3: Identify and demonstrate different bio control agents (Predator, Parasite and Parasitoids) and their use for sustainable pest management.</p> <p>CO 4: Learn and adapt the mass multiplication technique of biological control agents and established a bio control lab in future as an entrepreneur.</p> <p>CO5: Justify recommendation of bio-control agents in sustainable crop insect-pest management.</p>
834	AG 606	Crop Improvement-II ( <i>Rabi crops</i> )	<ul style="list-style-type: none"> <li>• To provide training of breeding methods on field.</li> <li>• To create ability for evaluate resistant varieties with breeding practices in the field.</li> <li>• To provide field training for observe and classify the field crop on basis of phenotype and genotypes.</li> </ul>	<p>CO1: Understand the importance of wild relative and utilized them to produce new varieties of Rabi crop.</p> <p>CO2: Know the gene preservation method for further use to improve Rabi varieties.</p> <p>CO3: Apply breeding methods to improve and develop the Rabi crops.</p> <p>CO4: Identify and evaluate the resistance gene relate to Rabi crop with high yield potential against pest and pathogen and utilization of genetic information.</p> <p>CO5: Understand the new genetic approaches to achieve a definite ideotype of Rabi crop.</p>

## Course Outcomes

S. No.	Course Code	Course Title	Course Objective	Expected Outcome
835	AG 607	Practical Crop Production – II (Rabi crops)	<ul style="list-style-type: none"> <li>• To acquaint with the various important field operations carried out in different crops.</li> <li>• To demonstrate the impact of practical exercises in field crops during crop season.</li> <li>• To know the systematic approach of cultural practices.</li> <li>• To know the practical management of Agri - inputs.</li> <li>• To study the cost of cultivation, net returns, and B/C analysis of different crops.</li> </ul>	CO.1: Acquaint with the knowledge of profitable crop production technology. CO.2: Understand and design the ruminative crop production techniques. CO.3. Adopt diversified farming system according to available farming situation. CO.4. Encourage the sustainable agriculture system. CO.5. Analyse the different profitable farming system.
836	AG 608	Principles of Organic Farming	<ul style="list-style-type: none"> <li>• To know the organic farming in relation to enhance the health of soil, plants, animals and humans.</li> <li>• To know about the certification process of organic farming.</li> </ul>	CO1 Explain the initiative of Government for organic products. CO2 Describe the role of NGOs in producing organic products and use of organic produce in current agriculture scenario. CO3 Identify the crops varieties for organic production and to control insect pest in organic farming. CO4 Illustrate the organic produce certification procedure and know the operation structure of national programme on organic production. CO5 Demonstrate the organic production on-farm. CO6 Know about the post harvest management of organic products.

## Course Outcomes

S. No.	Course Code	Course Title	Course Objective	Expected Outcome
837	AG 609	Farm Management, Production & Resource Economics	<ul style="list-style-type: none"> <li>• To determine and outline the conditions that give the optimum use of capital, labour, land and management resources in the production of crops, livestock and allied enterprises.</li> <li>• To determine the extent to which the existing use of resources deviates from the optimum use.</li> <li>• To analyse the forces which condition the existing production pattern and resource use?</li> <li>• To explain the means and methods in getting from the existing use to optimum use of resources.</li> <li>• To impart the fundamental knowledge and basic concepts of Economics and Farm Management.</li> </ul>	<p>CO1: The course contains a comprehensive treatment of the traditional agricultural production economics topics employing both detailed graphics and differential calculus.</p> <p>CO2: Focus on the neoclassical factor-product, factor-factor and product- product models, and is suitable for an advanced undergraduate or a beginning graduate –level course in static production economics.</p> <p>CO3: Understand limited resources available in the economy. Realize the need to exploit and utilize through development and improvement of production techniques.</p> <p>CO4: Make them aware of the availability of rich natural endowments to achieve sustainable agricultural development with this knowledge they can challenge the problems of unemployment inequality shortage of food productions poverty and be useful to compete advanced agricultural economies.</p> <p>CO5: Gain knowledge of the causes of regional variations in productivity and production, Social and economic inequality size of land holdings and lack of quality inputs etc and Suggest appropriate measures for the whole economy</p>
838	AG 610	Principles of Food Science & Nutrition	<ul style="list-style-type: none"> <li>• To provide a focus for graduate study and research in food science.</li> <li>• To understand about the nutritional needs of people in the various life stages. -The life cycle groups are infancy, childhood, adolescence, adulthood, pregnancy, lactation, and elderly.</li> </ul>	<p>CO1 Explaining the ideas and information on food science and nutrition issues appearing in the popular press.</p> <p>CO2 Discuss the important pathogen and spoilage microorganism in foods.</p> <p>CO3 Describe basic principles and practices of cleaning and sanitation in food preparation operation.</p> <p>CO4 Identity and explain nutrients in foods and the specific functions in maintaining health.</p> <p>CO5 Design a Balanced and modified diets formulate menu planning make health better.</p>

## Course Outcomes

S. No.	Course Code	Course Title	Course Objective	Expected Outcome
839	AG 611A	Weed Management	<ul style="list-style-type: none"> <li>• To define, identify and classify the weeds for their effective management.</li> <li>• To study common characteristics, beneficial and harmful effects caused by weeds.</li> <li>• To study herbicides, bio herbicides and allelochemicals for efficient weed management.</li> <li>• To study weed resistance and its management.</li> <li>• To assess weed indices, weed control efficiencies and cost of weed management.</li> </ul>	CO1: Types of weeds with examples, propagation and dissemination vis-a-vis classification for their effective control CO2: Discuss the characteristics, utility and damage caused by weeds CO3: Herbicidal, bio-herbicidal, allele-chemicals properties and their use in agriculture CO4: Understand weed resistance and its management CO5: Calculate weed indices, weed control efficiency of different weed control measures and cost of weed management
840	AG 611B	Micro Propagation Technologies	<ul style="list-style-type: none"> <li>• To understand the concept of plant tissue culture</li> <li>• To study the micro propagation</li> <li>• To study the morphogenesis</li> <li>• To understand the concept of somatic embryogenesis</li> <li>• To know the application of in vitro techniques</li> </ul>	CO1 Know the concept of plant tissue culture CO2 Demonstrate the micro propagation CO3 Know the morphogenesis CO4 Discuss concept of somatic embryogenesis CO5 Use of in vitro techniques in crop improvement
841	AG 611C	Hi-Tech Horticulture	<ul style="list-style-type: none"> <li>• To learn about inception of horticulture and its distinguishing features.</li> <li>• To Know about the various branches of horticulture.</li> </ul>	CO1 Use plant vegetative structure. CO2 Understand basic principles, processes and plant propagation methods. CO3 Understands to propagate plant, manage and harvest a variety of plant. CO4 Known about horticulture future relates to the economy and environments. CO5 Apply the knowledge about quality requirement and protected cultivation: advantages, controlled conditions.

## Course Outcomes

S. No.	Course Code	Course Title	Course Objective	Expected Outcome
842	AG 611D	System Simulation and Agro-Advisory	<ul style="list-style-type: none"><li>• To learn agricultural droughts on crop-wise for effective drought management practice.</li><li>• To evaluate the crop responses to weather elements.</li><li>• To develop weather based agro advisories to sustain crop production.</li><li>• To study about Weather forecasting- types of weather forecast and their uses.</li><li>• To study about Climate change, climatic variability, global warming.</li></ul>	CO1. Explain the role of Agro-Advisory in agriculture and its relation to other areas of agriculture. CO 2. Know about Crop models, concepts, techniques, types, data requirements. CO 3. Practice the concept of ITK for weather forecasting. CO 4. Prepare the crop weather calendars according to weather forecasting. CO 5. Understand the concept of agro meteorological Observatory.

## Course Outcomes

S. No.	Course Code	Course Title	Course Objective	Expected Outcome
843	AG 701	General Orientation & on Campus Training by Different Faculties	<ul style="list-style-type: none"> <li>• To understand the rural community life and different situations prevailing in villages with special reference to agriculture.</li> <li>• To help students to get acquaint with the socio-economic conditions of farmers and their problems with reference to agricultural development.</li> <li>• To provide an opportunity to students for practical training in Crop Production, Plant Sciences, Plant Protection, Social Sciences, Animal Production &amp; Dairying, Agrobased Industries and Skill Oriented Training through work experience.</li> <li>• To develop communication skill among students in using extension teaching methods in transfer of technology in the villages.</li> <li>• To make students to understand the agricultural technologies being followed by farmers and to prepare alternate farm plans to suit to the local situations in consultation with the farmers.</li> <li>• To develop confidence and competence in students for solving problems related to agriculture at farmers field.</li> <li>• To provide an opportunity to work with KVKs and agro based industries.</li> <li>• To help students to acquaint with the on-going thrust agricultural programmes and related transfer of technology (TOT), programmes in agriculture.</li> </ul>	CO1 Correlate theory and its applications for confidence building CO2 Develop the art of creative thinking CO3 Identify the gap between theory and practical CO4 Observe problem and possible solution CO5 Understanding and practicing local (ITK) and scientific methods for effective decision CO6 Develop skill for working in local institution/organization and agro based industries CO7 Learning business network including outlets of the industry CO8 Understand various processing units and hands-on trainings with ethics of industry CO9 Able to communicate the agricultural information and Transfer of Technology to the farmers community.

## Course Outcomes

S. No.	Course Code	Course Title	Course Objective	Expected Outcome
844	AG 702	Village attachment and Swachh Bharat Abhiyan Activities	<ul style="list-style-type: none"> <li>• To understand the rural community life and different situations prevailing in villages with special reference to agriculture.</li> <li>• To help students to get acquaint with the socio-economic conditions of farmers and their problems with reference to agricultural development.</li> <li>• To provide an opportunity to students for practical training in Crop Production, Plant Sciences, Plant Protection, Social Sciences, Animal Production &amp; Dairying, Agrobased Industries and Skill Oriented Training through work experience.</li> <li>• To develop communication skill among students in using extension teaching methods in transfer of technology in the villages.</li> <li>• To make students to understand the agricultural technologies being followed by farmers and to prepare alternate farm plans to suit to the local situations in consultation with the farmers.</li> <li>• To develop confidence and competence in students for solving problems related to agriculture at farmers field.</li> <li>• To provide an opportunity to work with KVKs and agro based industries.</li> <li>• To help students to acquaint with the on-going thrust agricultural programmes and related transfer of technology (TOT), programmes in agriculture.</li> </ul>	CO1 Correlate theory and its applications for confidence building CO2 Develop the art of creative thinking CO3 Identify the gap between theory and practical CO4 Observe problem and possible solution CO5 Understanding and practicing local (ITK) and scientific methods for effective decision CO6 Develop skill for working in local institution/organization and agro based industries CO7 Learning business network including outlets of the industry CO8 Understand various processing units and hands-on trainings with ethics of industry CO9 Able to communicate the agricultural information and Transfer of Technology to the farmers community.

## Course Outcomes

S. No.	Course Code	Course Title	Course Objective	Expected Outcome
845	AG 703	Unit attachment in University/College. KVK/Research Station	<ul style="list-style-type: none"> <li>• To understand the rural community life and different situations prevailing in villages with special reference to agriculture.</li> <li>• To help students to get acquaint with the socio-economic conditions of farmers and their problems with reference to agricultural development.</li> <li>• To provide an opportunity to students for practical training in Crop Production, Plant Sciences, Plant Protection, Social Sciences, Animal Production &amp; Dairying, Agrobased Industries and Skill Oriented Training through work experience.</li> <li>• To develop communication skill among students in using extension teaching methods in transfer of technology in the villages.</li> <li>• To make students to understand the agricultural technologies being followed by farmers and to prepare alternate farm plans to suit to the local situations in consultation with the farmers.</li> <li>• To develop confidence and competence in students for solving problems related to agriculture at farmers field.</li> <li>• To provide an opportunity to work with KVKs and agro based industries.</li> <li>• To help students to acquaint with the on-going thrust agricultural programmes and related transfer of technology (TOT), programmes in agriculture.</li> </ul>	CO1 Correlate theory and its applications for confidence building CO2 Develop the art of creative thinking CO3 Identify the gap between theory and practical CO4 Observe problem and possible solution CO5 Understanding and practicing local (ITK) and scientific methods for effective decision CO6 Develop skill for working in local institution/organization and agro based industries CO7 Learning business network including outlets of the industry CO8 Understand various processing units and hands-on trainings with ethics of industry CO9 Able to communicate the agricultural information and Transfer of Technology to the farmers community.

## Course Outcomes

S. No.	Course Code	Course Title	Course Objective	Expected Outcome
846	AG 704	Plant Clinic	<ul style="list-style-type: none"> <li>• To understand the rural community life and different situations prevailing in villages with special reference to agriculture.</li> <li>• To help students to get acquaint with the socio-economic conditions of farmers and their problems with reference to agricultural development.</li> <li>• To provide an opportunity to students for practical training in Crop Production, Plant Sciences, Plant Protection, Social Sciences, Animal Production &amp; Dairying, Agrobased Industries and Skill Oriented Training through work experience.</li> <li>• To develop communication skill among students in using extension teaching methods in transfer of technology in the villages.</li> <li>• To make students to understand the agricultural technologies being followed by farmers and to prepare alternate farm plans to suit to the local situations in consultation with the farmers.</li> <li>• To develop confidence and competence in students for solving problems related to agriculture at farmers field.</li> <li>• To provide an opportunity to work with KVKs and agro based industries.</li> <li>• To help students to acquaint with the on-going thrust agricultural programmes and related transfer of technology (TOT), programmes in agriculture.</li> </ul>	CO1 Correlate theory and its applications for confidence building CO2 Develop the art of creative thinking CO3 Identify the gap between theory and practical CO4 Observe problem and possible solution CO5 Understanding and practicing local (ITK) and scientific methods for effective decision CO6 Develop skill for working in local institution/organization and agro based industries CO7 Learning business network including outlets of the industry CO8 Understand various processing units and hands-on trainings with ethics of industry CO9 Able to communicate the agricultural information and Transfer of Technology to the farmers community.

## Course Outcomes

S. No.	Course Code	Course Title	Course Objective	Expected Outcome
847	AG 705	Agro-Industrial Attachment	<ul style="list-style-type: none"> <li>• To understand the rural community life and different situations prevailing in villages with special reference to agriculture.</li> <li>• To help students to get acquaint with the socio-economic conditions of farmers and their problems with reference to agricultural development.</li> <li>• To provide an opportunity to students for practical training in Crop Production, Plant Sciences, Plant Protection, Social Sciences, Animal Production &amp; Dairying, Agrobased Industries and Skill Oriented Training through work experience.</li> <li>• To develop communication skill among students in using extension teaching methods in transfer of technology in the villages.</li> <li>• To make students to understand the agricultural technologies being followed by farmers and to prepare alternate farm plans to suit to the local situations in consultation with the farmers.</li> <li>• To develop confidence and competence in students for solving problems related to agriculture at farmers field.</li> <li>• To provide an opportunity to work with KVKs and agro based industries.</li> <li>• To help students to acquaint with the on-going thrust agricultural programmes and related transfer of technology (TOT), programmes in agriculture.</li> </ul>	CO1 Correlate theory and its applications for confidence building CO2 Develop the art of creative thinking CO3 Identify the gap between theory and practical CO4 Observe problem and possible solution CO5 Understanding and practicing local (ITK) and scientific methods for effective decision CO6 Develop skill for working in local institution/organization and agro based industries CO7 Learning business network including outlets of the industry CO8 Understand various processing units and hands-on trainings with ethics of industry CO9 Able to communicate the agricultural information and Transfer of Technology to the farmers community.

## Course Outcomes

S. No.	Course Code	Course Title	Course Objective	Expected Outcome
848	AG 706	Project Report Preparation, Presentation and Evaluation	<ul style="list-style-type: none"> <li>• To understand the rural community life and different situations prevailing in villages with special reference to agriculture.</li> <li>• To help students to get acquaint with the socio-economic conditions of farmers and their problems with reference to agricultural development.</li> <li>• To provide an opportunity to students for practical training in Crop Production, Plant Sciences, Plant Protection, Social Sciences, Animal Production &amp; Dairying, Agrobased Industries and Skill Oriented Training through work experience.</li> <li>• To develop communication skill among students in using extension teaching methods in transfer of technology in the villages.</li> <li>• To make students to understand the agricultural technologies being followed by farmers and to prepare alternate farm plans to suit to the local situations in consultation with the farmers.</li> <li>• To develop confidence and competence in students for solving problems related to agriculture at farmers field.</li> <li>• To provide an opportunity to work with KVKs and agro based industries.</li> <li>• To help students to acquaint with the on-going thrust agricultural programmes and related transfer of technology (TOT), programmes in agriculture.</li> </ul>	CO1 Correlate theory and its applications for confidence building CO2 Develop the art of creative thinking CO3 Identify the gap between theory and practical CO4 Observe problem and possible solution CO5 Understanding and practicing local (ITK) and scientific methods for effective decision CO6 Develop skill for working in local institution/organization and agro based industries CO7 Learning business network including outlets of the industry CO8 Understand various processing units and hands-on trainings with ethics of industry CO9 Able to communicate the agricultural information and Transfer of Technology to the farmers community.

## Course Outcomes

S. No.	Course Code	Course Title	Course Objective	Expected Outcome
849	AG 801	Production Technology for Bioagents and Biofertilizer	<ul style="list-style-type: none"> <li>• To expose the students to industrial environment which cannot be simulated in the university.</li> <li>• To formalize the students with various materials, machines, processes, products and their applications along with relevant aspect of the shop management.</li> <li>• To make the students understand the psychology of the workers and approach to problems along with practices followed at factory.</li> <li>• To make the students understand the scope, functions and job responsibility-ties in various departments of an organization.</li> <li>• Expose to various aspects of entrepreneurship during the programme period.</li> </ul>	CO1: Adapt bio-pesticides and bio-fertilizers in place of chemical fertilizers for sustainable development of agriculture. CO2: Describe the mass production technique of bio-fertilizers and bio-pesticide in laboratory. CO3: Conduct the survey for identification of bio-control agents present in field condition and in bio-pesticide laboratory. CO4: Justify recommendation of bio-pesticide and bio-fertilizers to farmers for better pest control and maintain the soil health. CO5: Observe the effect of bio-pesticide on pest population and bio-fertilizers on soil health.
850	AG 802	Seed Production and Technology	<ul style="list-style-type: none"> <li>• To maintain a variety in its pure form.</li> <li>• To mass production of quality seed.</li> <li>• To storage of quality seed for long time.</li> </ul>	CO1 know seed production program for fill full the requirement of pure seed in market and increase the income. CO2 Understand the seed Storage to solve the availability crises of varietial seed due to adverse environmental conditions. CO3 Produce and distribute the disease free seed in the market to get the environment friendly cultivation of crops. CO4 Understand seed quality to increase the farm income by producing high yielding disease free quality seed and decrease the cost of cultivation also. CO5 Know about hybrid seed Production of different crops to increase the farm income.
851	AG 803	Mushroom Cultivation Technology	<ul style="list-style-type: none"> <li>• To disseminate mushroom production technology for economic and nutritional security.</li> <li>• To generate Income and employment through generation mushroom cultivation.</li> <li>• To acquire knowledge about edible and non edible mushroom.</li> <li>• To gain knowledge about nutritional value of mushroom and its value added products.</li> </ul>	CO1: Differentiate between edible and non edible mushroom CO2: Produce mushroom span. CO3: Prepare casing for Muhroom prodution CO4: Prepare Value Added Product of Mushroom CO5: Establish Mushroom cultivation Project.

## Course Outcomes

S. No.	Course Code	Course Title	Course Objective	Expected Outcome
852	AG 804	Soil, Plant, Water and Seed Testing	<ul style="list-style-type: none"> <li>• To disseminate mushroom production technology for economic and nutritional security.</li> <li>• To generate Income and employment through generation mushroom cultivation.</li> <li>• To acquire knowledge about edible and non edible mushroom.</li> <li>• To gain knowledge about nutritional value of mushroom and its value added products.</li> </ul>	CO1 Compare the different seed processing methods. CO 2 Explain the role of WTO and OECD in seed marketing. CO 3 Know about water holding capacity and water resources. CO4 Design different field plot fertilizer trials and greenhouse pot experiments. CO5 Demostrate the seed production methods on farms.
853	AG 805	Commercial Beekeeping	<ul style="list-style-type: none"> <li>• To understand the scope of apiculture as an entrepreneur.</li> <li>• To apply commercial methods of rearing, equipment, seasonal management, insect-pest and disease and important species for commercial use of honey bee.</li> <li>• To identify and demonstrate different commercially important honey bee species.</li> <li>• To learn about important insect pest and disease of honey bees.</li> <li>• To justify recommendation regarding beekeeping to the farmers and entrepreneurs for commercial beekeeping.</li> </ul>	CO 1: Adopt the apiculture as an entrepreneur according to agro climatic zone. CO 2: Apply commercial methods of rearing, equipment, seasonal management, insect-pest and disease and important species for commercial use of honey bee. CO 3: Identify and demonstrate different commercially important honey bee species. CO 4: Learn about important insect pest and disease of honey bees. CO5: Justify recommendation regarding beekeeping to the farmers and entrepreneurs for commercial beekeeping.

## Course Outcomes

S. No.	Course Code	Course Title	Course Objective	Expected Outcome
854	AG 806	Poultry Production Technology	<ul style="list-style-type: none"> <li>• to cover all aspects of modern poultry production including breeding , nutrition ,health, behavior, and welfare as well as the quality of meat and eggs.</li> <li>• To focus on different advancements in the fields of poultry and other animal rearing and animal production with emphasis on environmental and also production management</li> <li>• To undertake feasibility study and market survey to investigate opportunities in your district or country before establishing a poultry enterprise and to prepare a business plan.</li> <li>• To discuss with trainees.</li> <li>• To understand the poultry industry based on the past ,present and emphasis of future growth.</li> </ul>	<p>CO1: Acquire the basic knowledge about the techniques for poultry production meat and table eggs.</p> <p>CO2: Conduct post-mortem and use the knowledge of significant diseases in poultry production.</p> <p>CO3: Evaluate the quality of poultry meat and eggs.</p> <p>CO4: Conduct laboratory analyses applying central techniques related to the respective areas.</p> <p>CO5: Formulate diet for poultry.</p>
855	AG 807	Commercial Horticulture	<ul style="list-style-type: none"> <li>• To learn about inception of horticulture and its distinguishing features.</li> <li>• To know about the various branches of horticulture.</li> <li>• To providing employment, often in rural areas.</li> </ul>	<p>CO1: Demonstrate a fundamental understanding of plant identification, propagation, orchard establishment, use and maintenance of plant material best suited for conventional and sustainable horticulture.</p> <p>CO2: Apply horticultural skills and knowledge to operate various business entities found in the horticultural industry.</p> <p>CO3: Demonstrate an understanding of the composition, fertility and biology of soil and how they relate to good plant growth.</p> <p>CO4: Identify and practice safe use of tools, equipment and supplies used in horticulture careers.</p> <p>CO5: Identify and research career opportunities in the horticulture industry as well as emerging trends.</p>

## Course Outcomes

S. No.	Course Code	Course Title	Course Objective	Expected Outcome
856	AG 808	Floriculture and Landscaping	<ul style="list-style-type: none"> <li>• To understand various principles of landscape gardening.</li> <li>• To learn about different elements used in landscape gardening</li> </ul>	<p>CO1: Identify metrological instruments and understand the diversity within the profession of Floriculture following safety precautions.</p> <p>CO2: Identify the Plant morphology, different plant varieties and plant families.</p> <p>CO3: Identify and choose different propagation methods, Handling of seed, bulbs, cut flowers, Nursery plants, pot plants.</p> <p>CO4: Plan and execute Survey for landscaping and various types of indoor gardening.</p>
857	AG 809	Food Processing	<ul style="list-style-type: none"> <li>• To impart basic knowledge about food processing.</li> </ul>	<p>CO1: Define Freezing: requirements of refrigerated storage.</p> <p>CO2: Discuss Normal drying curve, effect of food properties on dehydration.</p> <p>CO3: Demonstrate Ionizing radiation and sources.</p> <p>CO4: Formulate and practice Packaging: Properties of packaging material, factors determining the packaging requirements.</p> <p>CO5: Discuss and apply in research career opportunities in the Food industry as well as emerging trends.</p>
858	AG 810	Agriculture Waste Management	<ul style="list-style-type: none"> <li>• To impart knowledge to students on various methods of agricultural waste management for eco-friendly energy and manure production.</li> <li>• To apply ecofriendly methods for agricultural waste management.</li> </ul>	<p>CO1: Understand applications, fundamental aspects and technological methods of waste management.</p> <p>CO2: Apply various eco-friendly methods for agricultural waste management.</p> <p>CO3: Evaluate and apply nutritive value and energy production potential of agro wastes.</p> <p>CO4: Analyze economic analysis of briquetting, setting up of briquetting and plant- appliances for biomass briquettes.</p> <p>CO5: Understand factors affecting – nutrient value and utilization of biogas slurry.</p>

## Course Outcomes

S. No.	Course Code	Course Title	Course Objective	Expected Outcome
859	AG 811	Organic Production Technology	<ul style="list-style-type: none"> <li>• To know the organic farming in relation to enhance the health of soil, plants, animals and humans.</li> <li>• To know about the certification process of organic farming.</li> </ul>	<p>CO1 Explain the initiative of Government for organic products.</p> <p>CO2 Describe the role of NGOs in producing organic products and use of organic produce in current agriculture scenario.</p> <p>CO3 Identify the crops varieties for organic production and to control insect pest in organic farming.</p> <p>CO4 Illustrate the organic produce certification procedure and know the operation structure of national programme on organic production.</p> <p>CO5 Demonstrate the organic production on-farm.</p>
860	AG 812	Commercial Sericulture	<ul style="list-style-type: none"> <li>• Train the students in identifying the diseases and pests of the mulberry plant.</li> <li>• It also involves giving students a thorough knowledge about the cultivation of mulberry, maintenance of the farm, seed technology, silkworm rearing and silk reeling.</li> <li>• Students get to learn about the quality of various things like leaf, seed cocoon, commercial cocoon and fibre so that they can get maximum return when actually practiced.</li> <li>• To learn about the various skills that are necessary for self-employment in the mulberry and seed production.</li> <li>• This course gives us employment and job opportunities in the public, private and government sector.</li> </ul>	<ol style="list-style-type: none"> <li>1. Define Origin and history of sericulture. Silk route and map of India and World; Temperate and tropical climate for sericulture practice.</li> <li>2. Discuss Environmental impact of sericulture: Eco-friendly activity of sericulture; Employment generation in sericulture and role of women in sericulture.</li> <li>3. Demonstrate Land and agro based part of industry. Industrial aspect of the industry; Silk reeling as a cottage industry; Handloom and power loom activities.</li> <li>4. Demonstrate and practice Textile fibres: Natural and Synthetic fibres: Advantage of silk fibre over other fibres: International demand of silk. Function Central Silk Board; Role of State Department of Sericulture. Role of universities and NGOs in sericulture development.</li> <li>5. Discuss and apply in research career opportunities in the Sericulture industry as well as emerging trends.</li> </ol>

## Course Outcomes

S. No.	Course Code	Course Title	Course Objective	Expected Outcome
861	AG 813	Agri Business Management	<ul style="list-style-type: none"> <li>• To help to take policy decisions in the field of agricultural marketing.</li> <li>• To understand various appraisal techniques in project with reference to agricultural products, agricultural credit management, financial risk management.</li> <li>• To orient towards agricultural entrepreneurship.</li> <li>• To study &amp; analysis of agro-based industries.</li> </ul>	<p>CO1 To know the fundamental marketing principles, role of marketing, marketing mix and observe the marketing problems dealt with by managers.</p> <p>CO2 Recognize the various marketing channels and areas and means to develop business ventures</p> <p>CO3 Assemble knowledge about organization and functioning of different institutions involved in agriculture marketing</p> <p>CO4 Evaluate the project feasibility and encourage them to start new ventures.</p> <p>CO5 Evaluate the Co-operatives in Agricultural Marketing</p>
862	AG 814	Agro-Advisory Services	<ul style="list-style-type: none"> <li>• To enhance the resilience of Indian agriculture covering crops.</li> <li>• To demonstrate specific technology packages for farmers .</li> <li>• To enhance the capacity of students and other stakeholders in climate resilient agricultural research and its applications.</li> <li>• To study the content of weather based agro meteorological advisory bulletin, its impact and farmers feedback.</li> </ul>	<p>CO1: Provides inputs to the farmers that can make a tremendous difference to the agriculture production.</p> <p>CO2: Prepare the students to deal with the market information and promotion of agriculture.</p> <p>CO3: Understand the impact of agro – advisory on crop production.</p> <p>CO4: Develop contingency plan for weather codes in consultation with villagers, extension workers and scientist.</p> <p>CO5: Assist the villagers for crops and water management planning with response to forthcoming season.</p>
863	AG 815	Nursery Management	<ul style="list-style-type: none"> <li>• To understand the propagation method of Horticulture crops</li> <li>• To impart knowledge about plant growth regulators in propagation.</li> <li>• To learn about raising nursery.</li> </ul>	<p>CO1 Understand the practical knowledge and propagation methods of horticulture crops.</p> <p>CO2 Know the raising and maintenance of root stock.</p> <p>CO3 Apply the knowledge about plant growth regulators and their uses in propagation.</p> <p>CO4 Improve their skill for solving field problems and layout preparation.</p> <p>CO5 Use of propagation media and understand the Tetrazolium salt test for determining germination.</p>

## Course Outcomes

S. No.	Course Code	Course Title	Course Objective	Expected Outcome
864	BA/BBALLB 101	Legal Method	This paper focuses on orientation of students to legal studies from the point of view of basic concepts of law and legal system.	CO1 an elementary understanding of the debates around the nature of law; CO2 be able to distinguish between the major kinds of law, legal systems and institutions; CO3 know the structure of the legal institutions and the hierarchy of courts in India CO4 acquire the ability to identify legal issues and principles underlying any given factual situation, and to undertake and present research on such issues; CO5 know the various sources of law and be able to synthesize such sources and use them to formulate arguments in their research CO6 be familiar with legal research sources and tools and basic techniques of legal and logical reasoning; CO7 be better able to write clearly and succinctly, tailoring their writing to their audience and their purpose
865	BA/BBALLB 102	Law of Contract-I	<ul style="list-style-type: none"> <li>• Familiar with various principles of contract formation enunciated in the Indian Contract Act, 1872.</li> <li>• To provide students with an understanding of the basic principles of law in relation to the formation of contracts.</li> <li>• To develop in students an ability to analyse factual situations and correctly identify the relevant principles of contract law that are applicable to the resolution of problems raised by the particular factual situations.</li> <li>• To equip the students to study further courses which rely on a knowledge of contract law.</li> </ul>	CO1 Define, distinguish and apply the basic concepts and terminology of the law of contract. CO2 Define and distinguish amongst the various processes involved in contract formation. CO3 Identify the relevant legal issues that arise on a given set of facts in the area of contract law. CO4 Apply the critical thinking required to bring about creative solutions to complex legal problems in the area of contract law. CO5 Identify the relevant legal issues that arise on a given set of facts in the area of contract law

## Course Outcomes

S. No.	Course Code	Course Title	Course Objective	Expected Outcome
866	BA/BBALLB 103	Legal English & Communication Skills	<ul style="list-style-type: none"> <li>• art of communication, client interviewing</li> <li>• Counselling advocacy skill in them.</li> <li>• Understand and describe importance of Legal Language.</li> <li>• Develop the Composition skills.</li> <li>• To provide the students with adequate experience to apply to legal rules.</li> </ul>	<p>CO1 complex legal texts. Summarize information and reconstruct Scan presentation arguments in a coherent.</p> <p>CO2 Produce organized and coherent communications and essays with clear paragraphs and appropriate methods for introducing and concluding.</p> <p>CO3 Produce well-supported communications and essays using different patterns of development taking into consideration purpose and audience.</p> <p>CO4 Write proposals, critical analyses, summaries and respond appropriately to case reviews/studies.</p> <p>CO5 Demonstrate techniques to avoid plagiarism (paraphrasing, summarizing and quoting) when producing a researched report with correct parenthetical and bibliographical citations using a specified documentation style.</p>
867	BA/BBALLB 106	Comprehensive Viva	<ul style="list-style-type: none"> <li>• Comprehensive Viva is conducted to test the knowledge of the student on the subject concerned.</li> <li>• The purpose of the viva is to establish that the work is of a sufficiently high standard to merit the award of the degree for which it is submitted.</li> <li>• In order to be awarded marks, the project should demonstrate an original contribution to knowledge and contain work which is deemed to contribute to the knowledge of the students.</li> </ul>	<p>CO1 Prepare comprehensively to answer questions from all the courses of two semesters.</p> <p>CO2 Attain Oral Presentation skills by answering questions in precise and concise manner.</p> <p>CO3 Gain confidence and inter-personal skills.</p> <p>CO4 Represent the minimum performances that must be achieved to successfully complete a course or program.</p> <p>CO5 Reflect essential knowledge, skills or attitudes; focus on results of the learning experiences.</p>
868	BA/BBALLB 201	Law of Contract-II	<ul style="list-style-type: none"> <li>• To specify such contracts of Indemnity and Guarantee to Bailment and Pledge and to Agency</li> <li>• To impart knowledge of various special contracts.</li> <li>• Law of agency, partnership and specific relief etc.</li> <li>• To introduce the students to some of the specific contracts that are pervasive and play a significant role in the day to day commercial transactions besides the law that governs them</li> <li>• To ingrain in the students a critical understanding of the context and importance of such contracts from an economic, social and legal perspective.</li> </ul>	<p>CO1 Know the context and rationale of specific contracts of Indemnity, Guarantee, Bailment, Pledge and Agency. (L4)</p> <p>CO2 Identify the principles and doctrines that guide such contracts.</p> <p>CO3 Exhibit an understanding of the legal concepts involved in such contracts.</p> <p>CO4 Determine what rights and duties parties acquire under such contracts.</p> <p>CO5 Know the relation such specific contracts have with our day to day commercial activities and their impact on the social and economic front.</p>

## Course Outcomes

S. No.	Course Code	Course Title	Course Objective	Expected Outcome
869	BA/BBALLB 202	Law of Torts and Consumer Protection	<ul style="list-style-type: none"> <li>• To enable the students understand the basic concept of liability and the nature of tort with reference to established case law.</li> <li>• It covers the Consumer Protection Act, 1986 to make aware consumer about their rights.</li> </ul>	<p>CO1 To study the principles of Tortious liability, The defenses available in an action for torts, the capacity of parties to sue and be sued and matters connection therewith.</p> <p>CO2 To study and evaluate the specific torts against the individual and property. With rapid industrialization, inadequacy of the law to protect the individual is exposed.</p> <p>CO3 To analysestatutes, to do research pertaining to judicial decisions on specific legal wrong.</p> <p>CO4 To be aware of the basic procedures for handling any types of consumer dispute.</p> <p>CO5 understand the basic concept of liability and the nature of tort case law.</p>
870	BA/BBALLB 206	Comprehensive Viva	Comprehensive Viva shall be conducted by a board of examiners constituted by the Academic Program Committee of the Faculty.	<p>CO1 Prepare comprehensively to answer questions from all the courses of two semesters.</p> <p>CO2 Attain Oral Presentation skills by answering questions in precise and concise manner.</p> <p>CO3 Gain confidence and inter-personal skills.</p> <p>CO4 Represent the minimum performances that must be achieved to successfully complete a course or program.</p> <p>CO5 Reflect essential knowledge, skills or attitudes; focus on results of the learning experiences.</p>
871	BA/BBALLB 301	Family Law-I	<ul style="list-style-type: none"> <li>• To apprise the students with the laws relating to marriage, dissolution, matrimonial remedies, adoption, contemporary trends in family institutions in India, in particular the Hindus and Muslims.</li> <li>• To provide understanding of basic concepts Of Family Law.</li> <li>• To provide basic understanding relating to Hindu and Muslim Law.</li> </ul>	<p>CO1 Students studying family law learn about basic concepts like marriage, divorce, parental custody, domestic abuse and children's rights.</p> <p>CO2 Family law examines historical and social contexts that have influenced the modern definition and regulation of families.</p> <p>CO3 Students will gain skills of thinking, analysis, written and verbal presentation of ideas of argument</p> <p>CO4 Basic concepts like marriage, divorce, parental custody, domestic abuse and children's rights.</p> <p>CO5 Analysis, written and verbal presentation of ideas of argument.</p>

## Course Outcomes

S. No.	Course Code	Course Title	Course Objective	Expected Outcome
872	BA/BBALLB 302	Constitutional Law-I	<ul style="list-style-type: none"> <li>• To provide understanding of basic concepts of Indian Constitution and various organs created by the Constitution including their functions.</li> <li>• It deals with Emergency Provisions and the amendment of the Constitution.</li> <li>• Understand the various organs of the constitution and their functions.</li> <li>• Acquire the basic knowledge of legislative, administrative and financial relations between Union and the States.</li> <li>• To develop the understanding on basic structure and emergency provisions.</li> </ul>	CO1 Understand and describe areas of criminal justice, law and society through a critical analysis of the subject CO2 Analyse lacunas within the criminal justice system and suggest the amendments have to make to provide the justice according to the changing needs of the society CO3 Analyse the process of judicial review and identify criteria used by courts to evaluate the constitutional validity. CO4 Acquire the knowledge of Legislative, Administrative and Financial relations and distribution of powers. CO5 Apply the theories of Basic Structure in general.
873	BA/BBALLB 303	Law of Crimes- I	<ul style="list-style-type: none"> <li>• To provide understanding of basic concepts of Indian Penal Code.</li> <li>• Understand the various chapters of the code and their functions.</li> <li>• To acquire the basic knowledge of the criminal law determining criminal liability of an offender.</li> <li>• To develop the understanding on punishments provided for the offences committed.</li> </ul>	CO1: Analyze lacunas within the criminal justice system and suggest the amendments have to make to provide the justice according to the changing needs of the society. CO2: Summarize the process of judicial review and identify criteria used by courts to evaluate the constitutionality of criminal law of India. CO3: Identify and synthesize social theory about crime, justice, and social deviance and explain and address various obstacles and barriers experienced by individuals before, during, and after internment CO4: State the steps and factors that lead from a crime to conviction. CO5: The evidence to support claims.
874	BA/BBALLB 306	Comprehensive Viva	Comprehensive Viva shall be conducted by a board of examiners constituted by the Academic Program Committee of the Faculty.	CO1 Prepare comprehensively to answer questions from all the courses of two semesters. CO2 Attain Oral Presentation skills by answering questions in precise and concise manner. CO3 Gain confidence and inter-personal skills. CO4 Represent the minimum performances that must be achieved to successfully complete a course or program. CO5 Reflect essential knowledge, skills or attitudes; focus on results of the learning experiences.

## Course Outcomes

S. No.	Course Code	Course Title	Course Objective	Expected Outcome
875	BA/BBALLB 401	Family Law-II	<ul style="list-style-type: none"> <li>• To Provide understanding of basic concepts of Indian Constitution.</li> <li>• Understand the various organs of the constitution and their functions.</li> <li>• Acquire the basic knowledge of legislative, administrative and financial relations between Union and the States.</li> <li>• To develop the understanding on basic structure and emergency provisions.</li> </ul>	<p>CO1: Students studying family law</p> <p>CO2: Family law examines and compares personal laws</p> <p>CO3: Students will gain skills of thinking, analysis, written and verbal presentation of ideas of argument.</p> <p>CO4: Learn about concepts like Succession, Inheritance</p> <p>CO5: Analysis, written and verbal presentation of ideas of argument.</p>
876	BA/BBALLB 402	Constitutional Law-II	<ul style="list-style-type: none"> <li>• To Provide understanding of fundamental rights and difference between rights and fundamental rights of Indian Constitution.</li> <li>• Understand the various Fundamental rights of the constitution.</li> <li>• To provide knowledge of writs</li> <li>• To develop the understanding on Directive Principles and fundamental duties.</li> </ul>	<p>CO1: Concept of 'State' in reference to the fundamental rights.</p> <p>CO2: The fundamental rights and the procedure for compliance of fundamental rights and Writ jurisdiction of Supreme Court and high court under Article 32 and 226.</p> <p>CO3: The duty of state and inter- relationship between fundamental rights and directive principles.</p> <p>CO4: State responsibility towards its citizens.</p> <p>CO5: Detailed analysis of directive principles and its enforcement.</p>
877	BA/BBALLB 403	Law of Crimes- II	<ul style="list-style-type: none"> <li>• To provide understanding of basic concepts of Indian Penal Code.</li> <li>• Understand the various chapters of the code and their functions.</li> <li>• To acquire the basic knowledge of the criminal law relating to offences against human body and property.</li> <li>• To develop the understanding on the punishments provided for the offences committed.</li> </ul>	<p>CO1: To illustrate how society views crime against women, human body and property.</p> <p>CO2: Demonstrate an in-depth understanding of the aspects of criminal justice, or law and its relationship to larger social issues</p> <p>CO3: Identify, explain and apply the principles of criminal law covered in the course</p> <p>CO4: Access, use, interpret and apply complex statutory material to solve criminal law problems.</p> <p>CO5: Law and its relationship to larger social issues</p>

## Course Outcomes

S. No.	Course Code	Course Title	Course Objective	Expected Outcome
878	BA/BBALLB 404	Administrative Law	<ul style="list-style-type: none"> <li>• The purpose of this paper is to enable the students to understand various aspects of administrative law including quasi-legislative, quasi-judicial and other material functions of administration and control thereof.</li> <li>• It governs the internal operations of these agencies and ensures that they do not abuse their power.</li> <li>• The main goal of administrative law is to protect the interests of the public as it interacts with government, such as when a person applies for Social Security.</li> <li>• It specifies how an agency can create and enforce the rules and regulations it needs to get done what it wants to get done. Its goal is to keep the agencies and their work transparent to the public and let the public participate in the rule-making process.</li> </ul>	<p>CO1: Students will learn about the Nature Development of law relating to administration and effective means of administrative control. The Focus is on their role in protecting the rights of individuals against abuse of administration and adjudicatory powers of the administration and liability of administrative authorities.</p> <p>CO2: Analyze and predict how unresolved or ambiguous administrative law questions could be resolved by the courts through an analysis of case law and the judicial method.</p> <p>CO3: Identify, explain and apply the principles of administrative law covered in the course.</p> <p>CO4: Identify and analyze some of the current controversies and trends in the area of administrative law.</p> <p>CO5: Access, use, interpret and apply complex statutory material to solve administrative law problems.</p>
879	BA/BBALLB 406	Comprehensive Viva	Comprehensive Viva shall be conducted by a board of examiners constituted by the Academic Program Committee of the Faculty.	<p>CO1 Prepare comprehensively to answer questions from all the courses of two semesters.</p> <p>CO2 Attain Oral Presentation skills by answering questions in precise and concise manner.</p> <p>CO3 Gain confidence and inter-personal skills.</p> <p>CO4 Represent the minimum performances that must be achieved to successfully complete a course or program.</p> <p>CO5 Reflect essential knowledge, skills or attitudes; focus on results of the learning experiences.</p>

## Course Outcomes

S. No.	Course Code	Course Title	Course Objective	Expected Outcome
880	BA/BBALLB 501	Environmental Studies & Environmental Laws	<ul style="list-style-type: none"> <li>• The basic concepts in environmental studies and to sensitize them towards the issues of environmental management.</li> <li>• The paper will also incorporate fieldwork.</li> </ul>	<p>CO1: Analyse advanced and integrated understanding of the complex body of knowledge in the field of environmental law.</p> <p>CO2: Develop the capacity to identify new law and apply existing law in the rapidly evolving legal context for environmental law.</p> <p>CO3: Understand in depth knowledge of the specialist area of environmental law and associated disciplinary areas.</p> <p>CO4: Determine and analyse the different causes of pollution and legal remedies to control it on national level.</p> <p>CO5: Analyse and evaluate laws relating to environmental aspect on a national level and its comparison with other countries.</p>
881	BA/BBALLB 502	Law of Evidence	<ul style="list-style-type: none"> <li>• With importance of evidence for establishment of claims and the related rules and principles.</li> </ul>	<p>CO1: Analyse and define the concept and general nature of evidence, and illustrate the different types of evidence and court procedures relating to evidence.</p> <p>CO2: Analyse the rule relating to relevance of evidence and admissibility of evidence before the court.</p> <p>CO3: Evaluate the rules relating to dying declaration and admissibility of dying declaration</p> <p>CO4: Determine and analyse the standard of proof and burden of proof in civil and criminal cases, and specify types of presumptions.</p> <p>CO5: Analyse and evaluate the rules governing examination in chief, cross examination and re- examination, and establish the procedures in the conduct of a civil or criminal trial.</p> <p>CO6: Determine the rules relating to competence and compellability of witnesses in relation to case study material.</p>

## Course Outcomes

S. No.	Course Code	Course Title	Course Objective	Expected Outcome
882	BA/BBALLB 503	Corporate Law	<ul style="list-style-type: none"> <li>• Knowledge: Basic and broad knowledge in business laws in management.</li> <li>• Ability to apply concepts, principles and theories to understand simple business laws.</li> <li>• Global Perspective: Awareness of the different business laws.</li> <li>• Awareness of the global business laws and its impacts on businesses.</li> </ul>	<p>CO1: Explain the concepts in business laws with respect of foreign trade.</p> <p>CO2: Apply the global business laws to current business environment.</p> <p>CO3: Analyse the principle of international business and strategies adopted by firms to expand globally.</p> <p>CO4: Integrate concept of business law with foreign trade.</p> <p>CO5: Strategies adopted by firms to expand globally.</p>
883	BA/BBALLB 504	Code of Civil Procedure	<ul style="list-style-type: none"> <li>• To acquire a knowledge of procedural aspects of civil courts.</li> <li>• Understand the various civil suit.</li> <li>• To provide knowledge of civil matters and functioning of the courts under civil law.</li> <li>• To develop the understanding on judgment writing and pleadings.</li> </ul>	<p>CO1: To Know the detail procedure for redressal of civil rights.</p> <p>CO2: Understand the jurisdiction of suit &amp; various dimensions of an interim order.</p> <p>CO3: Students will be able to recognize and address issues that arise in Civil Procedure that implicate relevant ethical, moral, and religious principles.</p> <p>CO4: Detailed analysis of directive principles and its enforcement.</p> <p>CO5: Good grounding in the subject before one enters the profession.</p> <p>CO6: Their ability and desire to engage in lifelong learning and service in their application, practice and use of the rules of civil procedure.</p>

## Course Outcomes

S. No.	Course Code	Course Title	Course Objective	Expected Outcome
884	BA/BBALLB 505	Alternative Dispute Resolution (ADR) (Clinical)	<ul style="list-style-type: none"> <li>• Achieving a thorough grasp of the study of the primary forms of dispute process, from negotiation to mediation to developments in adjudication and mixed processes;</li> <li>• Development of a solid understanding of interdisciplinary and comparative approaches to - and debates about - dispute resolution.</li> <li>• Acquiring expertise in the skills and techniques necessary for effective dispute resolution</li> </ul>	<p>CO1: Students to adopt a comparative approach, drawing on the experiences of many societies and jurisdictions – in a large number of which, entrenched approaches to dispute handling are now under radical re-examination.</p> <p>CO2: Balancing theoretical and practical concerns, the principal areas of discourse and practice that the student will come to understand are the processes of negotiation and mediation.</p> <p>CO3: The student will understand these processes in their own right and also in the context of the emergence of new types of dispute resolution professional, who offer mediation and other services as alternatives to the lawyer's often preferred practice of late settlement through litigation.</p> <p>CO4: other services as alternatives to the lawyer's often preferred practice of late settlement through litigation.</p> <p>CO5: The student understand these processes in their own right and also in the context of the of new types of dispute resolution professional.</p>
885	BA/BBALLB 506	Comprehensive Viva	Comprehensive Viva shall be conducted by a board of examiners constituted by the Academic Program Committee of the Faculty.	<p>CO1 Prepare comprehensively to answer questions from all the courses of two semesters.</p> <p>CO2 Attain Oral Presentation skills by answering questions in precise and concise manner.</p> <p>CO3 Gain confidence and inter-personal skills.</p> <p>CO4 Represent the minimum performances that must be achieved to successfully complete a course or program.</p> <p>CO5 Reflect essential knowledge, skills or attitudes; focus on results of the learning experiences.</p>

## Course Outcomes

S. No.	Course Code	Course Title	Course Objective	Expected Outcome
886	BA/BBALLB 601	Jurisprudence	<ul style="list-style-type: none"> <li>• Introduce important ideas of selected jurists so as to help the students or budding lawyers to think critically and creatively about law and its role in the contemporary society.</li> <li>• This course introduces the four main Schools of Jurisprudence i.e. the Natural Law School, Analytical Positivist School, Historical School and Sociological School.</li> <li>• It also deals with certain central issues like law and justice, law and morality and realist movement in order to acquaint the students with the nature of law and its role in society.</li> </ul>	<p>CO1: Demonstrate an advanced and integrated understanding of the political, social, historical, philosophical, and economic context of law.</p> <p>CO2: Engage in identification, articulation and critical evaluation of legal theory and the implications for policy.</p> <p>CO3: Critically analyse and research complex problems relating to law and legal theory and make reasoned and appropriate choices amongst alternatives.</p> <p>CO4: Social, historical, philosophical, and economic context of law.</p> <p>CO5: Legal theory and make reasoned and appropriate choices amongst alternatives.</p>
887	BA/BBALLB 602	International Law	<ul style="list-style-type: none"> <li>• Acquaint students with basics of Public International law and update them with the latest development.</li> <li>• Understand the need of International law and how it is useful.</li> <li>• Teach the basic features of public international law and the international legal order and the meaning of public international law for legal practice.</li> </ul>	<p>CO1: Demonstrate knowledge and understanding of the international rights framework, its origins and justifying theories.</p> <p>CO2: Demonstrate capacity to assess how specific human rights may be asserted, enforced or violated.</p> <p>CO3: Critically evaluate the relationship between international and domestic law.</p> <p>CO4: Demonstrate understanding of the role of lawyers of protection and capacity to contribute to ongoing processes of law reform.</p> <p>CO5: Protection and capacity to contribute to ongoing processes of law reform.</p>

## Course Outcomes

S. No.	Course Code	Course Title	Course Objective	Expected Outcome
888	BA/BBALLB 603	The Transfer of Property Act, 1882	<ul style="list-style-type: none"> <li>• To focus on concept and classification of property as well as principles governing transfer of immovable property.</li> <li>• To acquaint the students with basics of intellectual property rights with special reference to Indian Laws and its practices.</li> <li>• To compare and contrast the different forms of intellectual property protection in terms of their key differences and similarities.</li> <li>• To provide an overview of the statutory, procedural, and case law underlining these processes and their interplay with litigation.</li> <li>• To encourage and protect innovation in the form of intellectual property rights.</li> <li>• To provide a superior environment to students for commercialization of intellectual property.</li> <li>• To encourage research, scholarship, and a spirit of inquiry, thereby generating new knowledge.</li> </ul>	CO1: Skill to understand the concept of intellectual property rights. CO2: Develops procedural knowledge to Legal System and solving the problem relating to intellectual property rights. CO3: Skill to pursue the professional programs in Company Secretaryship, Law, Business(MBA), International Affairs, Public Administration and Other fields. CO4: Employability as the Compliance Officer, Public Relation Officer and Liaison Officer. CO5: Establishment of Legal Consultancy and service provider.
889	BA/BBALLB 604	Investment and Competition Law	<ul style="list-style-type: none"> <li>• Identify the relationship between education and income level.</li> <li>• Develop a budget.</li> <li>• Explore changes in labor market trend, knowledge of foreign investment law and the competition law .rules and regulation on bank and securities.</li> </ul>	CO1: Practice case analyses and evaluation of corporate conduct. CO2: Explain the economic, legal, and ethical implications of fraudulent behaviour in financial markets. CO3: Describe concepts such as fiduciary duty. CO4: Assess corporate leaders' moral duties to investors, shareholders, and customers. CO5: Implications of fraudulent behaviour in financial markets.

## Course Outcomes

S. No.	Course Code	Course Title	Course Objective	Expected Outcome
890	BA/BBALLB 605	Code of Criminal Procedure	<ul style="list-style-type: none"> <li>• This paper is to give students thorough knowledge of procedural aspects of working of criminal courts and other machineries.</li> <li>• Understand the various chapters of the code and their functions.</li> <li>• To understand the machinery for the detection of crime, apprehension of suspected criminals, collection of evidence, determination of the guilt or innocence of the suspected person and the imposition of suitable punishment on the guilty person.</li> <li>• The Criminal Procedure Code is designed to look after the process of the administration and enforcement of the Criminal law.</li> </ul>	<p>CO1. The system of criminal prosecution in India: who prosecutes; Process to Compel Appearance of Person, Process to Compel Production of Things, Right to speedy trial etc.</p> <p>CO2. The legal rules relating to arrest and bail under the Criminal Procedure Act, The rights of arrested persons and to apply such rules in a factual scenario.</p> <p>CO3. Describe principles applicable to the right to legal representation in Indian criminal trials and to apply such principles in a factual scenario.</p> <p>CO4. Describe the rules relating to appeals to higher courts in criminal cases and to apply such rules in a factual scenario.</p> <p>CO5: The rights of arrested persons and to apply such rules in a factual scenario.</p>
891	BA/BBALLB 606	Comprehensive Viva	Comprehensive Viva shall be conducted by a board of examiners constituted by the Academic Program Committee of the Faculty.	<p>CO1 Prepare comprehensively to answer questions from all the courses of two semesters.</p> <p>CO2 Attain Oral Presentation skills by answering questions in precise and concise manner.</p> <p>CO3 Gain confidence and inter-personal skills.</p> <p>CO4 Represent the minimum performances that must be achieved to successfully complete a course or program.</p> <p>CO5 Reflect essential knowledge, skills or attitudes; focus on results of the learning experiences.</p>
892	BA/BBALLB 701	Labour Law-I	<ul style="list-style-type: none"> <li>• To know the development and the judicial setup of Labour Laws.</li> <li>• To learn the salient features of industrial dispute and trade union.</li> <li>• To learn the laws relating to Industrial Relations, and Working conditions.</li> </ul>	<p>CO1. Development and the judicial setup of Labour Laws.</p> <p>CO2. The salient features of industrial disputes and trade unions power and function also to integrate the knowledge of Labour Law in General HRD Practice.</p> <p>CO3. The laws relating to Industrial Relations, working conditions and also learns the enquiry procedural and industrial discipline.</p> <p>CO4. Trade unions power and function also to integrate the knowledge of Labour Law in General HRD Practice.</p> <p>CO5. Working conditions and also learns the enquiry procedural and industrial discipline.</p>

## Course Outcomes

S. No.	Course Code	Course Title	Course Objective	Expected Outcome
893	BA/BBALLB 702	Tax Law	1. To acquaint the students with basic principles underlying the provisions of direct tax laws 2. To develop a broad understanding of tax practices. 3. To provide students with a working knowledge of the fundamental tax principles and rules that applies by individuals.	CO1. Exhibit sophisticated knowledge related to tax accounting rules and regulations. CO2. Identify, define, and resolve tax issues. CO3. Different types of incomes. CO4. Issues through their understanding, knowledge and application. CO5. Their taxability and expenses and their Deductibility.
894	BA/BBALLB 703	Law and Emerging Technologies	<input type="checkbox"/> To get familiar with the major technological changes that are affecting society and the legal profession. <input type="checkbox"/> To understand the key approaches, themes, challenges and limitations to govern emerging technologies through prospective legislation and regulation. <input type="checkbox"/> To learn the role, strengths and weaknesses of liability as a legal tool for governing emerging technologies. <input type="checkbox"/> To appreciate how technology is transforming the practice of law.	CO1. Understand and apply the fundamental legal principles of information technology law covered in the course. CO2. Apply the critical thinking required to bring about solutions to complex legal problems in the area of information technology law. CO3. Demonstrate an understanding of the many ways in which rapidly changing technology can affect, and be affected by, the law, in a way that can assist clients with their planning or legislators with their proposals. CO4. Apply the critical thinking required to bring about solutions to complex legal problems in the area of information technology law. CO5. Affected by, the law, in a way that can assist clients with their planning or legislators with their proposals.
895	BA/BBALLB 704	Human Rights Law	<ul style="list-style-type: none"> <li>• Acquaint students with basics of Public International law and update them with the latest development.</li> <li>• Lay the foundation of the Human Rights law and acquaint the students with basic human rights institutions.</li> </ul>	CO1. Demonstrate knowledge and understanding of Human Rights. CO2. Demonstrate capacity to assess how specific human rights may be asserted enforced or violated. CO3. Critically evaluates the relationship between international and domestic law on human rights CO4. The international human rights framework, its origins and justifying theories. CO5. Understand the Human rights may be asserted person enforced or violated.

## Course Outcomes

S. No.	Course Code	Course Title	Course Objective	Expected Outcome
896	BA/BBALLB 705A	Banking & Insurance Law	<p>With this course students are familiarized with and understand the main framework of banking and insurance. Students should understand the main characteristics of banking and insurance operation.</p>	<p>CO1 Analyse the learn the experiential knowledge of banking system</p> <p>CO2 Search Professionals can find lucrative opportunities in the area of retail, investment, merchant,</p> <p>CO3 The rapid growing field of financial and investment services is also attracting many reputed firms and independent legal consultants.</p> <p>CO4 understand the Legal practice system relating to Insurance and banking sector .</p> <p>CO5 Treasury and banking, all branches of insurance such as life, property, automobile, and medical insurance.</p>
897	BA/BBALLB 705B	Telecommunications Laws	<ul style="list-style-type: none"> <li>• Introduce the conceptual aspect of Telecommunications Law, prevailing legal and regulating framework at national as well as International Level.</li> </ul>	<p>CO1 Understand the internet and Telecommunication rules.</p> <p>CO2 Apply the functions of WTO&amp; OTHERS Regulating bodies.</p> <p>CO3 Reform the draw backs of .Telecommunication&amp; satellite sectors</p> <p>CO4 Apply The practice relating to Intellectual Property Rights</p> <p>CO5 .Understand the conceptual aspect of Telecommunications Law, prevailing legal and regulating framework at national as well as International Level</p>
898	BA/BBALLB 705C	Women and Law	<ul style="list-style-type: none"> <li>• Creating awareness as to importance and role of women in society through the medium of law.</li> <li>• It also focuses on women welfare laws.</li> </ul>	<p>CO1: Apply a systematic approach to eliminate on the ideas in the Women status</p> <p>CO2: Organizes awareness, skill training and capacity building programmes to different classes of women and men.</p> <p>CO3: Provides consultancy to Identify and discuss issues related to women and child offences</p> <p>CO4. Marginalize, subordinate and accord secondary citizenship women and underestimate or make the women's contribution invisible.</p> <p>CO5. Inculcates entrepreneurial spirit among the girls, rural and urban grass root women and promote micro entrepreneurs.</p>

## Course Outcomes

S. No.	Course Code	Course Title	Course Objective	Expected Outcome
899	BA/BBALLB 705D	Criminology	<ul style="list-style-type: none"> <li>• Introduce the students to a holistic understanding of crime. PSDA in this seminar paper will include seminar presentation, debates and group discussions, critical review of existing laws in India and a comparison with other countries.</li> <li>• The paper seeks to explore the possible practical applications of the various theories that have been formulated so far. It will also require the students to look up the international cases where these theories have been applied.</li> <li>• The students who opt for this paper will also visit the prisons/ juvenile homes/ juvenile courts / rehabilitation centre etc. and make an assessment of the current situation.</li> </ul>	<p>CO1: Analyse and define the concept of crime and antisocial behaviour in the society</p> <p>CO2: Analyse the various views given by philosophers on criminology.</p> <p>CO3: Evaluate the reasons behind the crime and significance of Penology in the present society</p> <p>CO4. The difference between crime and morality as the concept of crime changes from society to society.</p> <p>CO5. Theories of the punishments and its application in the criminal justice system.</p>
900	BA/BBALLB 706	Comprehensive Viva	Comprehensive Viva shall be conducted by a board of examiners constituted by the Academic Program Committee of the Faculty.	<p>CO1 Prepare comprehensively to answer questions from all the courses of two semesters.</p> <p>CO2 Attain Oral Presentation skills by answering questions in precise and concise manner.</p> <p>CO3 Gain confidence and inter-personal skills.</p> <p>CO4 Represent the minimum performances that must be achieved to successfully complete a course or program.</p> <p>CO5 Reflect essential knowledge, skills or attitudes; focus on results of the learning experiences.</p>
901	BA/BBALLB 801	Intellectual Property Rights	<ul style="list-style-type: none"> <li>• To acquaint the students with basics of intellectual property rights with special reference to copy right &amp; Indian Laws and its practices.</li> <li>• To provide an overview of the statutory, procedural, and case law underlining these processes and their interplay with litigation.</li> <li>• To provide a superior industrial design, Trade mark &amp; patent to students for commercialization of intellectual property.</li> </ul>	<p>CO1. The concept of intellectual property rights &amp; copy right Laws.</p> <p>CO2. Legal System and solving IPR.</p> <p>CO3. Skill to pursue the Business International Affairs.</p> <p>CO4. Skills to Public Administration and Other fields.</p> <p>CO5. Problem relating to intellectual property rights.</p>

## Course Outcomes

S. No.	Course Code	Course Title	Course Objective	Expected Outcome
902	BA/BBALLB 802	Labour Law-II	<ul style="list-style-type: none"> <li>On wages, wage policies, compensation, social security and retirement benefits during the course of employment and working conditions of employees.</li> </ul>	CO1. Resolve the labour welfare problems CO2. Social Security, private sector wages problems and CO3. Working conditions and also learn CO4. Students will learn the laws relating to Industrial Relations CO5. The enquiry procedural and industrial discipline.
903	BA/BBALLB 803	Interpretation of Statutes	<p>The subject is aimed to enhance the critical skills to equip the students with various aspects of interpretations</p>	CO1. Resolve the labour welfare problems CO2. Social Security, private sector wages problems and CO3. Working conditions and also learn CO4. Students will learn the laws relating to Industrial Relations CO5. The enquiry procedural and industrial discipline.
904	BA/BBALLB 804	International Trade Law	<ul style="list-style-type: none"> <li>Introduce the conceptual background of the subject along with existing and ongoing developments in the area of International Trade and World Trade Organisation's (WTO) Agreements.</li> <li>Special reference should also be made to India's response towards international trade and WTO.</li> </ul>	CO1. It focuses on analysing the gains from trade, the changing patterns of trade, the income distributional consequences of liberalising foreign trade CO2. The course relies predominantly on a standard collection international trade models to understand the motivations behind modern trade policies. CO3. During the weekly seminar, students then analyse the efficacy of trade policy, considering both intended CO4. Under stand the relationship between trade, investment, and economic growth, and the reasons for and consequences of trade policies. CO5. Apply the consequences of policy choices to the changing geopolitical environment in which these policies exist.
905	BA/BBALLB 805A	International Commercial Law	<ul style="list-style-type: none"> <li>Knowledge: Basic and broad knowledge in business laws in management. Ability to apply concepts, principles and theories to understand simple business laws.</li> <li>Global Perspective: Awareness of the different business laws.</li> <li>Awareness of the global business laws and its impacts on businesses.</li> </ul>	CO1. Explain the concepts in business laws with respect to foreign trade CO2. Apply the global business laws CO3. Analyse the principle of international business CO4. Strategies adopted by firms to expand globally CO5. Skills to current business environment

## Course Outcomes

S. No.	Course Code	Course Title	Course Objective	Expected Outcome
906	BA/BBALLB 805B	Election Law	<ul style="list-style-type: none"> <li>• Democracy is one of the basic features of the Constitution and free and fair elections is the cornerstone for constructive realization for democratic ideals and aspirations of the people of a country.</li> <li>• This paper is intended to acquaint the students regarding the significance of free and fair elections and various intricacies of the Elections Law, including electoral corrupt practices, which will facilitate them to choose responsive representatives for good governance.</li> </ul>	CO1. Understand and identify the importance of election in democratic country. CO2. Analyze lacuna within among the election law and available remedies. CO3. To suggest reformation in present election law and procedure. CO4. Apply to Meaning of Valid Nomination CO5. Under stand the Procedure for the problem of corruption etc.
907	BA/BBALLB 805C	International Humanitarian Law	<ul style="list-style-type: none"> <li>• Introduce the conceptual background of the subject along with existing and ongoing developments in the area of International Trade and World Trade Organisation's (WTO) Agreements.</li> <li>• Special reference should also be made to India's response towards international trade and WTO.</li> </ul>	CO1. Demonstrate a sound appreciation of the historical basis for the development of the law in the field. CO2. Demonstrate an advanced understanding of international law as it applies in the area of international humanitarian law. CO3. Demonstrate an advanced and integrated understanding of the application of international humanitarian law. CO4. Under stand the relationship between International Trade and Regionalism CO5. The actions of military forces and the impact of the law upon the protection of civilian populations in specific contexts.
908	BA/BBALLB 805D	Indirect Taxes	Focus of this paper is to orient students with various indirect taxes such as Goods and services tax. This optional paper will enable students to specialize in tax laws.	CO1. Different types of Goods & Services. CO2. Learn various provisions regarding registration. CO3. Sate the use of various adjustments in output and input tax. CO4. Under stand the implication in practical situations. CO5. Analyze the maintenance of books and records.

## Course Outcomes

S. No.	Course Code	Course Title	Course Objective	Expected Outcome
909	BA/BBALLB 806	Comprehensive Viva	Comprehensive Viva shall be conducted by a board of examiners constituted by the Academic Program Committee of the Faculty.	CO1 Prepare comprehensively to answer questions from all the courses of two semesters. CO2 Attain Oral Presentation skills by answering questions in precise and concise manner. CO3 Gain confidence and inter-personal skills. CO4 Represent the minimum performances that must be achieved to successfully complete a course or program. CO5 Reflect essential knowledge, skills or attitudes; focus on results of the learning experiences.
910	BA/BBALLB 901	Legal Ethics and Court Crafts <b>(Clinical- II)</b>	<ul style="list-style-type: none"> <li>• It is an indispensable complementary part of our legal system without the study of which no advocate is suitably equipped with the basic requisites required to go to the court.</li> <li>• Student will learn the basic rules and code of conduct of the advocates.</li> <li>• Student will learn the ethics and value of their profession.</li> <li>• It will guide the students about their rights and proper conduct in daily practice of law.</li> </ul>	CO1. To understand and apply the professional ethics and ethical standard of the legal profession. CO2 To know and evaluate the key themes in professional ethics. CO3. To know, Should lawyers aim to win at all costs. CO4. To give them an insight into moral decision making in the legal profession. CO5. To balance duties to their client, to the Courts, to justice in the abstract, and to themselves.
911	BA/BBALLB 902	Drafting, Pleading and Conveyance <b>(Clinical- III)</b>	To develop an understanding of drafting both for court purposes as well as for other legal forums and to inculcate the habit of self-study among students.	CO1. Students will understand drafting. CO2. Court purposes for other legal forums CO3. Students will be able to perform better in the subject. CO4. Students will be able to Written Statement. CO5. Students will be able to Application under the Limitation Act.
912	BA/BBALLB 903	Land and Real Estate Laws	<ul style="list-style-type: none"> <li>• To focus on the concept on Land Acquisition.</li> <li>• To develop the understanding on Tenancy and the it's governing Law.</li> <li>• This paper is intended to enable the students understand the basic concept Rajasthan Rent Control Act with reference to established case law.</li> <li>• Further, it covers the Real Estate Act,2016 to make aware the citizens about their rights.</li> </ul>	CO1. Identify and describe the revenue board courts. CO2. Demonstrate an understanding of the legal. CO3. Demonstrate an understanding of the necessary professional skills of urbanization including analytical skills. CO4. Function for a appeal revision and review. CO5. The legal and regulatory framework for tribunals and the regulatory rules.

## Course Outcomes

S. No.	Course Code	Course Title	Course Objective	Expected Outcome
913	BA/BBALLB 904A	International Refugee Law	<ul style="list-style-type: none"> <li>• To increase the knowledge and skills of government officials involved in the formulation and the application of legislation and policies affecting people in need of protection.</li> <li>• To provide basic knowledge of International Refugee Law.</li> </ul>	CO1. Analyze complex problems, concepts and theories in international refugee law and devise solutions appropriate to the specific context CO2. Undertake critical legal research, legal writing and resolution of complex legal problems. CO3. Research and write on the practice or theory of international refugee law including in-depth legal. CO4. An international or transnational dimension across a range of issues and topics in international refugee law. CO5. Legal and policy research in the international refugee law field, as well as the implementation of refugee law domestically.
914	BA/BBALLB 904B	Socio Economic Offences	<ul style="list-style-type: none"> <li>• The course examines the theories, ideas, nature and scope that are dominant in the field of socio economic offences.</li> <li>• An examination of the structural foundation of social, occupational, political and crimes with some comparison of street (predatory) type crimes will occur in this class.</li> </ul>	CO1. Demonstrate familiarity with the various definitions of socio economic offences. CO2. Develop an understanding of other tenets. CO3. The rationales or explanation for the committing offences. CO4. Socio economic offences such as social offences . CO5. To develop a reasonable amount of knowledge about the various types.
915	BA/BBALLB 904C	International Economic Law	<p>This module aims to provide students with an understanding of the legal and policy framework underlying various international economic exchanges. It will also encourage students to consider a range of economic, political, social and philosophical issues arising from in this field.</p>	CO1. Identify and critically analyse key. CO2. Formulate questions and engage in problem-solving exercises CO3. Make informed, independent and reasoned judgements. CO4. Social justice issues arising from legal rules CO5. Understand their wide-ranging relevance to modern society

## Course Outcomes

S. No.	Course Code	Course Title	Course Objective	Expected Outcome
916	BA/BBALLB 904D	Law of International Organizations	<ul style="list-style-type: none"> <li>• This course examines the international law relative to international organizations and looser institutional arrangements, such as those without a distinct legal personality and <i>sui generis</i> entities such as the ICRC.</li> <li>• Traditional topics such as admission, decision-making and financing are considered, as well as various normative and operational activities.</li> <li>• This course deals only incidentally with the maintenance of international peace and security.</li> </ul>	CO1. Evaluate the international law applicable CO2. Evaluate the interaction between various institutions and their role CO3. Critically assess, reflect on and evaluate areas of evolving or contentious international law pertaining to international institutions; CO4. Selected international organizations and non-governmental organizations CO5. The broader international legal system including its institutional framework
917	BA/BBALLB 905A	Private International Law	<ul style="list-style-type: none"> <li>• Study the basic principles governing conflict of laws in their application to various situations.</li> </ul>	CO1. Evaluate the international law applicable CO2. Evaluate the interaction between various institutions and their role CO3. Critically assess, reflect on and evaluate areas of evolving or contentious international law pertaining to international institutions; CO4. Selected international organizations and non-governmental organizations CO5. The broader international legal system including its institutional framework;
918	BA/BBALLB 905B	Health Care Law	<ul style="list-style-type: none"> <li>• To provide understanding of basic concepts of Health Care Law.</li> <li>• Understand the various aspect of health care law including the constitutional perspective, obligations and negligence of medical professionals.</li> <li>• To acquire the basic knowledge of remedies available to consumer of health care.</li> <li>• To develop the understanding on professional obligations of Doctors.</li> </ul>	CO1. Legal principles relevant to the fields of health law studied in this course. CO2. Understand the Constitutional Provisions related to health. CO3. Legal approaches to addressing law problems. CO4. Principles of negligence, consent, privacy and confidentiality, and regulation. CO5. Legal and policy approaches to addressing health law problems.

## Course Outcomes

S. No.	Course Code	Course Title	Course Objective	Expected Outcome
919	BA/BBALLB 905C	Comparative Laws	<ul style="list-style-type: none"> <li>• It focuses on the civil and common law traditions and comparative approaches to law.</li> <li>• While introducing other legal traditions and discussing trends of convergence, reconciliation and transitions in legal traditions and approaches.</li> </ul>	CO1. Acquainting the students with the comparative method in the study of Comparative Law CO2. The possibilities of employing that method for the better understanding and reform of our legal system. CO3. The conception of legal rule in the two legal systems will be specially addressed and examined. CO4. Trends of Convergence, Reconciliation and Transitions CO5. Major Agencies International Labour Organization, UNIDROIT, International law Commission
920	BA/BBALLB 905D	Socio-Legal Dimensions of Gender	<ul style="list-style-type: none"> <li>• This paper intends to sensitize the students about the changing dimensions of gender and also familiarizes them with the subtle manifestations of inequality rooted in our society.</li> </ul>	CO1. Organizes awareness, skill training and capacity building programmes to different classes of women and men. CO2. Provides consultancy to Identify and discuss issues related to LGBT Community, Prostitution and Trafficking. CO3. The course will Study and analyze, what are the legal provisions enacted to ameliorate these situations CO4. Special emphasis on Honour Killings Law, Witch-Hunting Laws CO5. What is the scope and shortcomings in the existing legal regime in this regard.
921	BA/BBALLB 906	Comprehensive Viva	Comprehensive Viva shall be conducted by a board of examiners constituted by the Academic Program Committee of the Faculty.	CO1 Prepare comprehensively to answer questions from all the courses of two semesters. CO2 Attain Oral Presentation skills by answering questions in precise and concise manner. CO3 Gain confidence and inter-personal skills. CO4 Represent the minimum performances that must be achieved to successfully complete a course or program. CO5 Reflect essential knowledge, skills or attitudes; focus on results of the learning experiences.

## Course Outcomes

S. No.	Course Code	Course Title	Course Objective	Expected Outcome
922	BA/BBALLB 1001	Dissertation and Presentation on Dissertation****	<ul style="list-style-type: none"> <li>• Guidance and support throughout the writing of your dissertation.</li> <li>• From discussing your initial ideas of your dissertation through the process of actually writing the document,</li> <li>• This module will provide you with the information and support required from both the teaching staff and your allocated dissertation supervisor.</li> </ul>	<p>CO1 identifies key research questions within the field of Demography on which you will carry out independent research.</p> <p>CO2 Manage your time effectively whilst working on your independent research.</p> <p>CO3 Demonstrate appropriate referencing and develop skills in other aspects of academic writing</p>
923	BA/BBALLB 1002	Moot Court Exercise and Internship* (Lawyers/Law Firms)	<p>After the completion of internship by the students, the work done by the candidate as recorded in his/her daily diary along with a consolidated internship report would be evaluated by a Board of examiners consisting of Dean/HoD, an External Examiner, one faculty member nominated by Dean/HoD and the supervisor concerned.</p>	<p>CO1 Literature Review – Demonstrating knowledge. Verbs such as Research, Examine, Study, and Investigate are suitable.</p> <p>CO2 The Research Methodology – How the research is performed. These might include: Collect data, Select interviewees, Analyse results as examples.</p> <p>CO3 Focus on the Critical Evaluation or Discussion chapters. Verbs such as Analyse, Compare, Discuss, and Evaluate would be appropriate.</p> <p>CO4 There may be one or two final objectives. To Conclude, and/or To Recommend.</p> <p>CO5 Study Project Management as it applies to the Automotive in legal Industry</p>

## Course Outcomes

S. No.	Course Code	Course Title	Course Objective	Expected Outcome
924	BALLB 104	History – I	<ul style="list-style-type: none"> <li>• To answer the question how and why the present has evolved from the past in the manner it has. There is another reason which makes history so important.</li> <li>• The way we perceive our past constructs our identity in the present and also builds our vision of the future.</li> <li>• For this reason it is important to understand both historiography and historical methodology.</li> </ul>	<p>CO1: Each major will demonstrate, in either capstone course and/or in writing the Honors thesis the ability to formulate a clear argument, support the argument with appropriate and thorough evidence, and reach a convincing conclusion.</p> <p>CO2: Each major will demonstrate the ability to compare and contrast different processes, modes of thought, and modes of expression from different historical time periods and in different geographic areas.</p> <p>CO3: Each major will demonstrate in research topic choices and resulting papers the ability to recognize and articulate the diversity of human experience, including ethnicity, race, language, sex, gender, as well as political, economic, social, and cultural structures over time and space.</p> <p>CO4: Students should understand academic honesty, a concept presented to them in all history classes.</p> <p>CO5: Understand and evaluate different historical ideas, various arguments, and points of view.</p>
925	BALLB 105	Sociology-I	<ul style="list-style-type: none"> <li>• To focus on basic concepts of sociology relevant for understanding of society.</li> <li>• To understand various social issues.</li> </ul>	<p>CO1 Cultivation of successful interactions among people of diverse racial and ethnic backgrounds.</p> <p>CO2 Strong use of math and science skills in problem solving.</p> <p>CO3 Researching and analyzing data; facility with both qualitative and quantitative data</p> <p>CO4 Identify and apply sociological concepts and theories to understand social phenomena.</p> <p>CO5 Identify how social structures create and reproduce different forms of social inequality, locally and globally.</p>

## Course Outcomes

S. No.	Course Code	Course Title	Course Objective	Expected Outcome
926	BALLB 203	History- II	<ul style="list-style-type: none"> <li>• Modern times in India, the developments of modern legal procedures, laws and institutions and how they impacted the Indians and their old systems.</li> <li>• The emergence of present judicial system can be traced to the historical developments in colonial India. The paper looks at the framing of Indian Constitution.</li> </ul>	<p>CO1 Students will distinguish between primary and secondary sources and identify and evaluate evidence.</p> <p>CO2 Students will demonstrate in discussion and written work their understanding of different peoples and cultures in past environments and of how those cultures changed over the course of the centuries.</p> <p>CO3 Students will demonstrate in written work and class discussions the ability to recognize and articulate the diversity of human experience, including ethnicity, race, language, gender, as well as political, economic, social, and cultural structures over time and space.</p> <p>CO4 It encourages educators to think explicitly about the aims of world history education and about the knowledge and understandings that they expect their students to achieve.</p> <p>CO5 It has a unified chronology. That is, it organizes the human past into nine Big Eras, each of them encompassing changes around the globe. The curriculum does not use civilizations and their exclusive chronologies as the main units of history, even though developments within major societies are richly explored.</p>
927	BALLB 204	Sociology-II	<ul style="list-style-type: none"> <li>• This paper is to focus on basic concepts of sociology</li> <li>• Understanding of society and various social issues.</li> </ul>	<p>CO1 Define theory and describe its role in building sociological knowledge.</p> <p>CO2 Compare and contrast basic theoretical orientations.</p> <p>CO3 Describe how sociology differs from and is similar to other social sciences, and give examples of these differences.</p> <p>CO4 Identify how social structures create and reproduce different forms of social inequality, locally and globally.</p> <p>CO5 Apply social scientific principles to understand the social world.</p>

## Course Outcomes

S. No.	Course Code	Course Title	Course Objective	Expected Outcome
928	BALLB 205	Political Science-I	<ul style="list-style-type: none"> <li>• Understanding the basic concepts, theories and functioning of State.</li> <li>• The course prepares the student to receive instruction in Constitutional Law and Administrative Law in the context of political forces operative in society.</li> <li>• It examines political organization, its principles (State, Law and Sovereignty) and constitutions. As a final point, the course attempts to evaluate the contributions of Western and Indian political thinking in the context of politico-legal experiences.</li> </ul>	<p>CO1: To acquaint with the theories, approaches, concepts and principles of political theory.</p> <p>CO2: understands the world, their country, their society, as well as themselves and have awareness of ethical problems, social rights, values and responsibility to the self and to others.</p> <p>CO3: To compare with procedure of various social institutions and government institutions.</p> <p>CO4: Understand different disciplines from natural and social sciences to mathematics and art, and develop interdisciplinary approaches in thinking and practice.</p> <p>CO5: Think critically, follows innovations and developments in science and technology, demonstrate personal and organizational entrepreneurship and engage in life-long learning in various subjects.</p>
929	BALLB 304	Economics-I	<ul style="list-style-type: none"> <li>• To provide broad understanding of basic concepts of economics</li> <li>• Understanding of relationship between economics and law.</li> </ul>	<p>CO1: Demonstrate an advanced and integrated understanding of the political, social, historical, philosophical, and economic context of law.</p> <p>CO2: To demonstrate the effect of supply and make a relation between supply and production.</p> <p>CO3 Engage in identification, articulation and critical evaluation of legal theory and the implications for policy.</p> <p>CO4: Critically analyse and research complex problems relating to law and legal theory and make reasoned and appropriate choices amongst alternatives.</p> <p>CO5: Understand the concept of money and law</p>

## Course Outcomes

S. No.	Course Code	Course Title	Course Objective	Expected Outcome
930	BALLB 305	Political Science-II	<ul style="list-style-type: none"> <li>• understanding of theories of state</li> <li>• Basic concepts and functioning of State &amp; Government.</li> </ul>	<p>CO1 Define important field-specific theories and concepts, and understand their role in developing political science knowledge.</p> <p>CO2 Summarize conceptual argument or theoretical approaches, apply them to field-relevant situations, and support their application with appropriate evidence.</p> <p>CO3 Compare and evaluate the merits of multiple policies, theories, or concepts from different disciplinary perspectives.</p> <p>CO4 Understand the global trends &amp;various problems</p> <p>CO5 Analyze the basic concept of political scenario</p>
931	BALLB 405	Economics-II	<ul style="list-style-type: none"> <li>• The objective of this paper is to provide broad understanding of basic concepts of economics and understanding of relationship between economics and law.</li> <li>• Students will learn how markets and other governance structures organize core economic activities, such as production, distribution, and consumption, and the growth of productive resources.</li> <li>• Students will learn about the determinants of macroeconomic conditions (national output, employment, inflation).</li> </ul>	<p>CO1: Students will be able to identify and explain economic concepts and theories related to the behavior of economic agents, markets, industry and firm structures, legal institutions, social norms, and government policies.</p> <p>CO2: Students will be able to integrate theoretical knowledge with quantitative and qualitative evidence in order to explain past economic events and to formulate predictions on future ones.</p> <p>CO3: Students will be able to evaluate the consequences of economic activities and institutions for individual and social welfare.</p> <p>CO4: Students will be able to identify the basic features of alternative representations of human behavior in economics.</p> <p>CO5: To analyse balance of Trade and Payment.</p>
932	BBALLB 104	Principles of Management	<ul style="list-style-type: none"> <li>• To gain an understanding of principles and functions of management.</li> <li>• To gain insights into history and development of management thought.</li> <li>• To analyse the managerial issues and problems arising in an organization</li> </ul>	<p>CO1 Assume the roles and responsibilities associated with managerial functions</p> <p>CO2 Identify the key contributors and their contributions in the development of management thought</p> <p>CO3 Compare various approaches in management for problem solving</p> <p>CO4 Contributions in the development of management thought.</p> <p>CO5 Responsibilities associated with managerial functions.</p>

## Course Outcomes

S. No.	Course Code	Course Title	Course Objective	Expected Outcome
933	BBALLB 105	Economics - I	<ul style="list-style-type: none"> <li>• To orient students to take decisions in dynamic, economic business environment.</li> <li>• To develop the ability to explain core economic terms, concepts, and theories</li> <li>• To demonstrate the ability to employ the “economic way of thinking.”</li> </ul>	<p>CO1 Develop ideas of the basic characteristics of Indian economy, its potential on natural resources.</p> <p>CO2 Understand the importance, causes and impact of population growth.</p> <p>CO3 the society wherein all major ventures are getting corporatized, a law student should acquaint himself with the knowledge of special contracts apart from equipping himself with general principles of contract.</p> <p>CO4 know the legal services requirement in a corporate office so that he can enhance his relevance as a lawyer in society</p> <p>CO5 Distribution, translate and relate them with economic development.</p>
934	BBALLB 203	Financial Management	<ul style="list-style-type: none"> <li><input type="checkbox"/> To develop an understanding about the scope of financial management with understanding the concept of wealth maximization in modern fast changing complex business world</li> <li><input type="checkbox"/> To give knowledge about the analysis of changes in financial position of corporate entity and develop capabilities in solving complex managerial problems as a business manager</li> <li><input type="checkbox"/> To impart knowledge on capital budgeting decision making with a basic concept of different techniques to appraise business projects</li> </ul>	<p>CO1 Able to explain accounting statements</p> <p>CO2 Time value of money for any investment decision.</p> <p>CO3 Assess the capital structure of a firm and state its impact on firm's profitability.</p> <p>CO4 Analyse the financial statement with the help of ratio analysis.</p> <p>CO5 State its impact on firm's profitability.</p>
935	BBALLB 204	Organizational Behavior	<ul style="list-style-type: none"> <li><input type="checkbox"/> To understand the basics of organizational behavior, nature of organizational behavior and its objective</li> <li><input type="checkbox"/> To explain the impact of different parameters on individuals and the relation between individuals and their environment</li> <li><input type="checkbox"/> To analyze different types of personality theories, motivational theories and an analysis of individual behavior</li> </ul>	<p>CO1 organizational behaviour concepts.</p> <p>CO2 Evaluate personality types, perception and learning process on human behaviour</p> <p>CO3 Recognize the application of motivational theories in practical terms.</p> <p>CO4 Correlate organizational behaviour concepts with individual and group behaviour</p> <p>CO5 Organizational culture, managing Organizational culture.</p>

## Course Outcomes

S. No.	Course Code	Course Title	Course Objective	Expected Outcome
936	BBALLB 205	Business Environment	<ul style="list-style-type: none"> <li>• To understand the different environment in the business climate.</li> <li>• To familiarize the students about minor and major factors affecting the business in various streams.</li> <li>• To know the different environment like, political, technological and economic environment in the business.</li> </ul>	CO1 Known and analysis different business environment. CO2 Evaluate the major factors, which affect the business. CO3 Understand and analyse various political. CO4 Technological and economic environment in the business CO5 Political Environment: Functions of state
937	BBALLB 304	Principles of Marketing	<ul style="list-style-type: none"> <li>• To understand the nature and significance of the Marketing Function and the Marketing management process.</li> <li>• To gain knowledge about the key aspects of the Buying Behaviour of consumers and develop an understanding of the STP Process.</li> <li>• To explain the factors affecting various product, pricing, channel management and Marketing communication decisions.</li> </ul>	CO1 the core concepts of marketing and the goals of the Marketing function CO2 Analyse the environment and recommend appropriate Segmentation CO3 Recommend suitable product, pricing, and distribution and Marketing Communication strategies for a brand to achieve the Marketing objective. CO4 Targeting and Positioning Strategy for a product CO5 Analyse the buying behaviour of a given target market segment.
938	BBALLB 305	Economics - II	<ul style="list-style-type: none"> <li>• To provide broad understanding of basic concepts of economics and understanding of relationship between economics and law.</li> <li>• To impart the knowledge of factors governing Indian economy and its growth.</li> <li>• To make them Understand the role of the Indian economy in the global context</li> </ul>	CO1 The basic characteristics of economic development and growth of Indian economy CO2 The causes and impact of population growth. CO3 Agriculture as the foundation of economic growth and development. CO4 Analyse balance of Trade and Payment. CO5 The foundation of economic growth and development.
939	BBALLB 405	Human Resource Management	<ul style="list-style-type: none"> <li>• To equip the students with knowledge, skills and competencies required to manage people.</li> <li>• To acquaint the students with various functions and processes related to human resource management.</li> <li>• To provide conceptual framework required for human resource planning and development.</li> </ul>	CO1 Demonstrate the understanding of theoretical CO2 Develop an overview on various functions CO3 Identify the human resource needs of an organization and plan accordingly CO4 Framework required for effective Human Resource Management CO5 Processes of human resource management.

## Course Outcomes

S. No.	Course Code	Course Title	Course Objective	Expected Outcome
940	MBA101	Computer Application in Business	<ol style="list-style-type: none"> <li>1. Have a fundamental understanding of components of IT infrastructure-hardware, software and networking components</li> <li>2. Have a basic understanding of the role and importance of ICT skills as a life skill, with respect to modern business environment</li> <li>3. Understand Information systems concepts and their role in contemporary business.</li> </ol>	<p>CO1 Gain familiarity with the concepts and terminology used in the development, implementation and operation of business application systems.</p> <p>CO2 Explore various options in Networking Technology can be used to support existing businesses and strategies</p> <p>CO3 Achieve hands-on experience with productivity/application software to enhance business activities</p> <p>CO4 Explore various methods that Information Technology can be used to support existing businesses and strategies.</p> <p>CO5 Investigate emerging technology in shaping new processes, strategies and business models.</p>
941	MBA102	Management Concepts & Business Communication	<ol style="list-style-type: none"> <li>1. To gain an understanding of principles and functions of management.</li> <li>2. To gain insights into history and development of management thought.</li> <li>3. To enable them to gain appreciation for emerging ideas, techniques, procedures and practices in the field of management.</li> </ol>	<p>CO1 Define application of management concepts to understand the major internal features of a business system and the environment in which it operates.</p> <p>CO2 Know and explain the managerial actions of planning, organizing and controlling with an ethical look.</p> <p>CO3 Demonstrate critical and analytical thinking when presented with managerial problems and express their views and opinions on managerial issues</p> <p>CO4 Discover the basic design elements of organizational structure and evaluate their impact on employees.</p> <p>CO5 Discuss the appropriateness of various leadership styles and communication strategies used in organizations.</p>
942	MBA103	Financial Reporting, Statements and Analysis	<ol style="list-style-type: none"> <li>1. To develop an understanding about the scope of financial accounting with understanding the concept of profit maximization in changing and complex business world</li> <li>2. To provide an understanding, importance of accounting; preparation of final accounts for profit making organization</li> <li>3. To give knowledge about the analysis of changes in financial position of corporate entity and develop capabilities in solving complex managerial problems as a business manager</li> </ol>	<p>CO1 Understand various branches of accounting and significance of accounting standards</p> <p>CO2 Apply the rules of accounting and understand the keeping of subsidiary books</p> <p>CO3 Apply accounting rules in determining financial results and preparation of financial statement.</p> <p>CO4 Understand financial statements and can analyze the financial statement with ratio and cash flow analysis.</p> <p>CO5 Evaluate changes in financial position of corporate entity and solve complex managerial problems.</p>

## Course Outcomes

S. No.	Course Code	Course Title	Course Objective	Expected Outcome
943	MBA104	Marketing Management	<ol style="list-style-type: none"> <li>1. To understand the nature and significance of the Marketing Function and the Marketing management process.</li> <li>2. To gain knowledge about the key aspects of the Buying Behavior of consumers and develop an understanding of the STP Process.</li> <li>3. To explain the factors affecting various product, pricing, channel management and Marketing communication decisions.</li> </ol>	CO1 List the core concepts of marketing and the goals of the Marketing function CO2 Determine the buying behavior of a given target market segment CO3 Identify and evaluate target segments CO4 Determine product and pricing policy CO5 Summarize the nature and functions of distribution channels
944	MBA105	Organizational Behavior	<ol style="list-style-type: none"> <li>1. To provide a basic knowledge of main ideas and key theories relating to organizational behavior.</li> <li>2. To provide an understanding of the behavior of individuals and groups inside the organization using theoretical framework.</li> <li>3. To facilitate a critical evaluation of organizational practices and their impact on work behaviors, attitudes and performance.</li> </ol>	CO1 Explain the principle concepts and theories of Organizational Behavior CO2 Analyze individual and group behaviour and understand the implications of organizational behaviour on the process of management CO3 Analyze different motivational theories and choose best effective motivational strategies for the organization CO4 Understand the organizational system, including structure, culture, conflict management strategies used in organizations CO5 Describe organizational change and development affecting the working of organizations
945	MBA106	Business Statistics	<ol style="list-style-type: none"> <li>1. To understand the importance of data and how to collect, organize and summarize those data.</li> <li>2. To describe preliminary statistical techniques to solve problems and impart the knowledge of interpreting the result of data analysis.</li> <li>3. To enable the students in terms of understanding the statistical aspects related to business thereby enhancing their skills in this regard.</li> </ol>	CO1 Describe the need for data analysis and formulate the statistical problem and solve it. CO2 Define basic statistical tools which is useful for managerial decision making. CO3 Calculate and Interpret the results of statistical analysis for improved managerial decision making CO4 Compare magnitudes of aggregates of related variables CO5 Determine and report the relationship between the variables.

## Course Outcomes

S. No.	Course Code	Course Title	Course Objective	Expected Outcome
946	MBA107	Managerial Economics	<ol style="list-style-type: none"> <li>1. To explain the basics of economics and describe its application in managerial problems.</li> <li>2. To demonstrate the effect of demand and cost on business decisions and make a relation between cost and production.</li> <li>3. To analyse different types of market and explain pricing decisions in the markets.</li> </ol>	<p>CO1 Remember the concepts of micro economics and also able to understand the various micro economic principles to make effective economic decisions under conditions of risk and uncertainty.</p> <p>CO2 Understand the law of demand &amp; supply &amp; their elasticities , evaluate &amp; analyse these concepts and apply them in various changing situations in industry . Students would be able to apply various techniques to predict demand for better utilization of resources.</p> <p>CO3 Understand the production concept and how the production output changes with the change in inputs and able to analyse the effect of cost to business and their relation to analyze the volatility in the business world and plan accordingly.</p> <p>CO4 Understand &amp; evaluate the different market structure and their different equilibriums for industry as well as for consumers for the survival in the industry by the application of various pricing strategies.</p> <p>CO5 Analyse the macroeconomic concepts &amp; their relation to micro economic concept &amp; how they affect the business &amp; economy.</p>
947	MBA108	Legal and Business Environment	<ol style="list-style-type: none"> <li>1. To understand the concept of contract, performance of contract and sales of goods act.</li> <li>2. To understand the concept of partnership business, dissolution of firm and rights and duties of partners.</li> <li>3. To make the students familiar about the different aspects of environment in the business climate.</li> </ol>	<p>CO1 Analyze the essentials and validity of contract.</p> <p>CO2 Develop the understanding of sales of goods act.</p> <p>CO3 Understand the critical issues related to partnership business and able to identify the rights of consumers.</p> <p>CO4 Describe the various factors affecting business environment.</p> <p>CO5 Analyse the role of MNCs in balance of payment and foreign trade.</p>

## Course Outcomes

S. No.	Course Code	Course Title	Course Objective	Expected Outcome
948	MBA109	Managerial Skills for Effectiveness - I	<ul style="list-style-type: none"> <li>1. To provide a basic knowledge about the skills required to become an effective manager.</li> <li>2. To develop the knowledge of Soft skills required in any organization.</li> </ul>	<p>CO1 Know and interpret the level of self awareness and make efforts to change the same.</p> <p>CO2 Recognize the importance of good communication in organization</p> <p>CO3 Examine activities and processes which lead to the development of creativity in organization.</p> <p>CO4 Adapt the various time management techniques in daily life.</p> <p>CO5 Demonstrate good presentation skills.</p>
949	MBA 201	Indian Economy and Policy	<ul style="list-style-type: none"> <li>1. To gain knowledge about the major developments and issues in Indian economy.</li> <li>2. To discusses the sectoral balances and key issues in financial and external sectors of the economy</li> <li>3. To develop critical thinking among students by taking cognizance of the contemporary developments in the economy.</li> </ul>	<p>CO1 Analyse Indian economic problems and can correlate development with the requirements.</p> <p>CO2 Evaluate sectoral imbalances and can analyse the issues in Indian economy.</p> <p>CO3 Critically analyze the contemporary economic policies and their impact on development</p> <p>CO4 Critically analyze the sectoral composition of Indian Economy and role of industrial sector in Indian economy.</p> <p>CO5 Recognize the role &amp; issues of external sector in Indian economy.</p>
950	MBA202	Corporate Finance	<ul style="list-style-type: none"> <li>1. To give the knowledge about scope of financial management and makes the students familiar about the financial environment of business.</li> <li>2. To imbibe the knowledge about capital budgeting decision to appraise business project.</li> <li>3. To impart knowledge about capital structures theories, working capital management and cost of capital for decision making of any business organization.</li> </ul>	<p>CO1 Analyze and evaluate the financial system and financial environment of the organization</p> <p>CO2 Apply the techniques of capital budgeting for selecting best investment opportunities</p> <p>CO3 Assess the capital structure of the organization and evaluate the profitability condition</p> <p>CO4 Apply the concept of working capital management in the organization</p> <p>CO5 Analyze the Cost Volume Profit Analysis of the organization</p>

## Course Outcomes

S. No.	Course Code	Course Title	Course Objective	Expected Outcome
951	MBA203	Quantitative Techniques	<ol style="list-style-type: none"> <li>1. To give understanding of Linear equations and Linear Programming.</li> <li>2. To develop the understanding of specially structured Programming like transportation and Assignment.</li> <li>3. To describe the basic concept of Decision making under uncertainty and in a competitive situation.</li> </ol>	<p>CO1 Recognize the source of a quantifiable problem, solve the issues involved and produce an appropriate action plan.</p> <p>CO2 Solve the equations related to Linear programming</p> <p>CO3 Observe and compute the specially structured programming of transportation and assignment problems.</p> <p>CO4 Recognise and analyse strategic situations and represent them as games</p> <p>CO5 Analyze the decision making problems under uncertainty and competitive situations.</p>
952	MBA204	Operations Management	<ol style="list-style-type: none"> <li>1. To take decisions in Planning, organizing and controlling of operations function.</li> <li>2. To know the operations function in manufacturing and service industry.</li> <li>3. To develop improvement skills in operations through maintaining high quality standards, value engineering and value analysis.</li> </ol>	<p>CO1 Apply operations management in manufacturing and service industry.</p> <p>CO2 Apply and implement the knowledge of different layout and location decisions in real life situations.</p> <p>CO3 Analyze and calculate work study and simulation techniques in practical situations of manufacturing industry.</p> <p>CO4 Adapt and Compute inventory control techniques in manufacturing industry.</p> <p>CO5 Analyze skills in operations function to improve quality standards in value engineering and value analysis</p>
953	MBA205	Marketing Research	<ol style="list-style-type: none"> <li>1. Understand the concept / fundamentals of research and their types.</li> <li>2. Understand the practical application of various research techniques.</li> <li>3. Understand the importance of scaling &amp; measurement techniques and sampling techniques</li> <li>4. Understand the importance of coding, editing, tabulation and analysis in doing research.</li> <li>5. Understanding and applying the concept of statistical analysis which includes ANOVA technique and technique of report writing.</li> </ol>	<p>CO1 Understanding &amp; Knowledge of concept / fundamentals for different types of research.</p> <p>CO2 Formulating Research Proposals &amp; Applying relevant research designs &amp; techniques.</p> <p>CO3 Understanding &amp; Assessing relevant scaling &amp; measurement techniques for research and choosing appropriate sampling techniques for research</p> <p>CO4 Evaluating different techniques of coding, editing, tabulation and analysis in doing research.</p> <p>CO5 Evaluating statistical analysis which includes t test, z test, Chi Square test, ANOVA technique and prepare research report.</p>

## Course Outcomes

S. No.	Course Code	Course Title	Course Objective	Expected Outcome
954	MBA206	Human Resource Management	<ol style="list-style-type: none"> <li>1. To acquaint the students with various functions and processes related to human resource management.</li> <li>2. To provide conceptual framework required for human resource planning and development.</li> <li>3. To impart the students with the knowledge of social security legislations and employee safety at workplace.</li> </ol>	<p>CO1 Know and explain theoretical concepts and develop an overview on various functions and processes of human resource management.</p> <p>CO2 Demonstrate a basic understanding of different tools used in forecasting and planning human resource needs.</p> <p>CO3 Know and Relate the role of Training in the organization.</p> <p>CO4 Discuss the key issues related to administering the human elements such as motivation, compensation, appraisal, career planning.</p> <p>CO5 Describe and examine statutory and non- statutory rules and regulations affecting employees and employers</p>
955	MBA 207	Entrepreneurship	<ol style="list-style-type: none"> <li>1. To simulate the real life activities of entrepreneurs in the startup age of a new venture.</li> <li>2. To provide the skills to start and build enterprise, implement it successfully</li> <li>3. To inculcate skills to manage the transition of a start up to a full fledged business entity.</li> </ol>	<p>CO1 List the characteristics of an entrepreneur , intrapreneur as well their role in the economic development of the country.</p> <p>CO2 Design business plan</p> <p>CO3 Determine the entry barriers to the industry</p> <p>CO4 Identify stages of growth in entrepreneurial ventures</p> <p>CO5 Identify pitfalls in family business</p>
956	MBA208	Indian Ethos and Business Ethics	<ol style="list-style-type: none"> <li>1. To acquaint the students with Indian Ethos and its relevance to managerial decision making.</li> <li>2. To understand the importance of ethics and its effect on business and society.</li> <li>3. To sensitize students to the ethical standards both professional and personal and produce balanced and effective managers in this liberal and globalised environment.</li> </ol>	<p>CO1 Understand the concept of Indian ethos and different ethical dimensions for managerial decision making</p> <p>CO2 Understand the management idea from Vedas, Mahabharata, Panchtantra, Kautilya's Arthashastra</p> <p>CO3 Analyze the relevance of Bhagvad Gita in overall development of the organization</p> <p>CO4 Understand the basic framework of Business ethics and Professional ethics used in the organization</p> <p>CO5 Apply the knowledge of ethics in management in everyday life to make a balance between personal and professional life</p>
957	MBA209	Managerial Skills for Effectiveness - II	<ol style="list-style-type: none"> <li>1. To develop and enhance leadership skills , communication and peer to peer relationships,</li> <li>2. To teach soft skills required for any organization.</li> </ol>	<p>CO1 Know and interpret the decision making process</p> <p>CO2 Understand and manage organizational conflict</p> <p>CO3 Understand and improve delegation skills</p> <p>CO4 Identify and develop leadership skills</p> <p>CO5 Develop effective Team management skills</p>

## Course Outcomes

S. No.	Course Code	Course Title	Course Objective	Expected Outcome
958	MBA 301	Strategic Management	<ol style="list-style-type: none"> <li>1. To understand the various perspective and concepts in the field of strategic management.</li> <li>2. To analyze different kind of strategies for business planning in organizations.</li> <li>3. To familiarize the concept of strategy formulation among students.</li> </ol>	<p>CO1 Understand the basic concepts, need and principles of strategic management in overall business development</p> <p>CO2 Analyze and formulate different strategies for business level planning</p> <p>CO3 Classify and understand the internal and external environment of the business</p> <p>CO4 Analyze the organizational strategies that will be effective for future course of action</p> <p>CO5 Understand the basic concept of competitive advantage for managing a business successfully in a global context</p>
959	MBA 302	Project Management	<ol style="list-style-type: none"> <li>1. Define the roles of the project manager, functional manager, and executives in a project management environment.</li> <li>2. To provide a valuable insight to students in the area to understand formulation of corporate investment strategies, prepare feasibility reports and projects.</li> <li>3. To understand the financial appraisal of project and become aware of the scheduling and execution of projects</li> </ol>	<p>CO1 Understand basics of project life cycle and differentiate between various projects.</p> <p>CO2 Define the goals and objective of a project and analyse a projects feasibility from technical, market and financial perspective.</p> <p>CO3 Understand complex projects using appropriate planning tools.</p> <p>CO4 Review and evaluate a project and decide whether to carry the project or not.</p> <p>CO5 Define potential threats and opportunities for the project</p>
960	MBA 303	Summer Internship	<p>Each student shall undergo practical training of six-eight weeks after second semester exams in an approved business / industrial / service organization and submit at least two copies of the Summer Training Report to the Dean/Director of the Institution within two weeks of the commencement of the third Semester.</p>	<p>CO1 Understand, observe and practice on job the skills, knowledge, attitudes, and perceptions along with the experience needed to constitute a professional identity.</p> <p>CO2 Demonstrate research aptitude</p> <p>CO3 Examine the working of the real organizations</p> <p>CO4 Know, observe and discover business organizations in their totality.</p> <p>CO5 Explore career opportunities in their areas of interest.</p>

## Course Outcomes

S. No.	Course Code	Course Title	Course Objective	Expected Outcome
961	MBAHR-304	Training & Development	<ol style="list-style-type: none"> <li>1. To provide an in-depth understanding of the role of training in HRD.</li> <li>2. To enable the course participants to manage the Training system and processes.</li> <li>3. To understand to importance of evaluation methods.</li> </ol>	<p>CO1 Relate and discuss the importance of training in an organization.</p> <p>CO2 Differentiate and manipulate the learning process in individuals and Apply the same in organization.</p> <p>CO3 Recognize and calculate the organizational training needs and suitably apply it.</p> <p>CO4 Apply the training evaluation methods.</p> <p>CO5 Practice various technology based tools for effective learning.</p>
962	MBAHR 305	Performance Management	<ol style="list-style-type: none"> <li>1. To understand the basics and nature of performance management, and its objective.</li> <li>2. To explain the impact of performance appraisal process on different H.R. Functions.</li> <li>3. To understand the need of performance management system in organization.</li> </ol>	<p>CO1 Understand the importance of implementing the performance management system in organization.</p> <p>CO2 Understand and examine the Model of performance management system.</p> <p>CO3 Understand and organize performance appraisal program.</p> <p>CO4 Compute Competency Mapping.</p> <p>CO5 Describe and apply the knowledge in Linking Performance Management to Rewards and Recognitions.</p>
963	MBAHR-306	Organizational Change & Development	<ol style="list-style-type: none"> <li>1. To understand the concept of organizational change and development process.</li> <li>2. To familiarize the students with the concepts of organizational change and its methods in a brief manner.</li> <li>3. To familiarizes the concept of organizational development and its interventions.</li> </ol>	<p>CO1 Describe the concept for the effective change in the organization</p> <p>CO2 Understand the resistance to change and how to handle it for overall management process</p> <p>CO3 Apply the knowledge of different leadership styles for Organizational Change and Development</p> <p>CO4 Illustrate the importance of organizational development</p> <p>CO5 Classify major types of organizational development interventions</p>

## Course Outcomes

S. No.	Course Code	Course Title	Course Objective	Expected Outcome
964	MBAHR307	Manpower Planning & Control	<ol style="list-style-type: none"> <li>1. To understand the purpose, process and applications of human resource planning.</li> <li>2. To analyze the role of forecasting in manpower planning.</li> <li>3. To familiarize students with the concept of succession planning , career &amp; career planning , MDPs and six sigma.</li> </ol>	<p>CO1 Identify the human resource needs of an organization and plan accordingly</p> <p>CO2 Practice and select forecasting techniques in manpower planning.</p> <p>CO3 Understand the use of Career Development. Adapt various Career Planning, and succession planning techniques in the organization</p> <p>CO4 Investigate and understand the need of MDP in Organization.</p> <p>CO5 Analyze and choose activities and processes which lead to the development of innovation and creativity in organization.</p>
965	MBAFM-304	Investment Analysis and Portfolio Management	<ol style="list-style-type: none"> <li>1. To impart knowledge in Investment decision making with understanding of classification of investors and different investment channels.</li> <li>2. To give knowledge of risk management understanding the concept of technical and fundamental analysis of risk for investment decision making.</li> <li>3. To impart knowledge of portfolio management with understanding of different Models of modern portfolio management</li> </ol>	<p>CO1 Initiate investment decision after analysing influencing pillars for selection of different investment channels suitable for different class of investors</p> <p>CO2 Apply conceptual and analytical framework of evaluating a security.</p> <p>CO3 Apply technical framework of evaluating a security.</p> <p>CO4 Understand portfolio construction and management techniques and strategies.</p> <p>CO5 To provide students with working knowledge framework of Portfolio analysis, their risk and returns and their usefulness while evaluating portfolios.</p>
966	MBAFM-305	Income Tax: Theory & Practice	<ol style="list-style-type: none"> <li>1. To acquaint the students with basic principles underlying the provisions of direct tax laws</li> <li>2. To develop a broad understanding of tax practices.</li> <li>3. To provide students with a working knowledge of the fundamental tax principles and rules that applies by individuals.</li> </ol>	<p>CO1 Compute the income from salary</p> <p>CO2 Analyze and compute income from house property and Business &amp; Profession.</p> <p>CO3 Understand exemptions of capital gains and incomes of other sources.</p> <p>CO4 Calculate taxable income and tax liability of assessee.</p> <p>CO5 understand the procedure of filing and assessment.</p>

## Course Outcomes

S. No.	Course Code	Course Title	Course Objective	Expected Outcome
967	MBAFM-306	Management of Financial Services	<ul style="list-style-type: none"> <li>1. To impart knowledge about Indian financial system and Indian financial market and its assets.</li> <li>2. To develop knowledge about new and innovative financial services introduced in recent years.</li> </ul>	<p>CO1 Gain an understanding of the functioning of the financial system in India, its constituents namely, the institutions, markets, instruments, services and intermediaries.</p> <p>CO2 Apply critical, analytical and integrative thinking while understanding the functioning for the leasing and hire purchase</p> <p>CO3 Apply critical, analytical and integrative thinking while understanding the functioning for the venture capital and merchant banking</p> <p>CO4 Apply critical, analytical and integrative thinking while understanding the functioning for the Mutual funds, housing financial system &amp; insurance</p> <p>CO5 Apply critical, analytical and integrative thinking while understanding the functioning for the credit cards , factoring &amp; forfeiting.</p>
968	MBAFM-307	Cost & Management Audit	<ul style="list-style-type: none"> <li>1. To give understanding of cost audit and procedure of valuation and verification of inventories,</li> <li>2. To give information about professional ethics and code of conduct of cost auditor.</li> <li>3. To provide students with a working knowledge of Management Audit and its policies.</li> </ul>	<p>CO1 Describe the procedure involved in cost audit of inventories.</p> <p>CO2 Understand &amp; Recognize the ethical values and code of conduct of cost auditor.</p> <p>CO3 Preparation of Cost Audit Report</p> <p>CO4 Describe the procedure involved in Management audit of inventories.</p> <p>CO5 Review of Various Policies</p>
969	MBAMKT-304	Retail and Distribution Management	<ul style="list-style-type: none"> <li>1. To know about Distribution channel and different types of retail institutions.</li> <li>2. To understand the role and importance of store location, layout and Information Technology in retailing.</li> <li>3. To understand the areas of decision making in merchandise management.</li> </ul>	<p>CO1 Understand and define the concepts, philosophies and environment of the retail industry in Indian and global context.</p> <p>CO2 Discuss the factors affecting store location and store layout and design store layout</p> <p>CO3 Apply Merchandising and staffing strategy to achieve Retail targets</p> <p>CO4 Discuss Buyer Behavior &amp; Describe Pricing &amp; Promotion Strategies used in Retailing</p> <p>CO5 Understand and explain the concepts, philosophies of Logistics and Supply chain Mgmt.</p>

## Course Outcomes

S. No.	Course Code	Course Title	Course Objective	Expected Outcome
970	MBAMKT-305	Marketing of Services	<p>1. To understand the dominant role of Services Sector in Current Business Environment, Growth in employability and 2. To acquaint students with special knowledge and skills required for being in this sector.</p> <p>3. To explore complexity in marketing of services due to its differentiating characteristics.</p>	CO1 List the types of services attributes CO2 Classify the phases of purchase process CO3 Design response to misbehaving customers CO4 Assemble physical evidence and servicescape CO5 Decide & measure service quality
971	MBAMKT-306	Consumer Behavior	<p>1. To develop a conceptual base for understanding the theoretical and practical implications of consumer behavior in the modern society.</p> <p>2. To develop an understanding of internal influences like personality, perception, motivation and learning on individual consumer decision making process.</p> <p>3. To develop an understanding of external influences of social and cultural factors on individual consumer decision making process.</p> <p>4. To develop a basic understanding of organizational buying.</p>	CO1 Examine the nature of consumer behavior and its relation with market demographics CO2 Develop strategies to influence change in consumer attitude CO3 Assess impact of social cultural settings on consumer's behaviour CO4 Describe and understand the consumer decision making process CO5 Describe and understand the organizational buying behavior and assess the impact of factors on organizational culture
972	MBAMKT-307	Integrated Marketing Communication	<p>1. To understand the basic concept and nature of integrated marketing communication.</p> <p>2. To know how the marketing communication process influences consumer decision making.</p>	CO1 Classify advertising and sales promotion types CO2 Relate a relationship between advertising and publicity CO3 Examine the use of IMC tools in community relations , Government relations, Employee relations & Crisis Management CO4 Design Integrated Marketing Communication for a brand CO5 Evaluating Marketing Communication Programmes

## Course Outcomes

S. No.	Course Code	Course Title	Course Objective	Expected Outcome
973	MBAIT-304	Data Mining for Business Decisions	<ol style="list-style-type: none"> <li>Understand the fundamentals of the data mining process, classification and how data mining works.</li> <li>Understand the tools, techniques and models for intelligence analysis and visualisation are examined with an emphasis on new and emerging technologies in data mining.</li> </ol>	<p>CO1 Understand the concept of origin of data mining, its process, classification and applications.</p> <p>CO2 Identify appropriate data mining algorithms to solve real world problems</p> <p>CO3 Compare and evaluate different data mining techniques like classification, prediction, clustering and association rule mining</p> <p>CO4 Describe complex data types with respect to spatial and web mining.</p> <p>CO5 Evaluate the performance and other trends in data mining</p>
974	MBAIT-305	Managing Software Projects	<ol style="list-style-type: none"> <li>Comprehend and manage the components involved software project management</li> <li>Plan for software project that is, estimate size and effort, a schedule, resource allocation, configuration control, change management and project risk identification and management.</li> <li>To understand Software Project Models, Software Management Concepts and Project Evaluation.</li> </ol>	<p>CO1 Apply the knowledge of software project management- Project life cycle and IT development, extreme project management, etc.</p> <p>CO2 Plan for software project that is, estimates size and effort, a schedule, resource allocation, configuration control, change management and project risk identification and management.</p> <p>CO3 Identify related problems and formulate solutions of Software project management.</p> <p>CO4 Assess and formulate the components for project schedule and procurement</p> <p>CO5 Determine and evaluate factors for risk assessment and project evaluation</p>
975	MBAIT-306	Managing Digital Innovation and Transformation	<ol style="list-style-type: none"> <li>To develop an understanding about E-Commerce practices</li> <li>Understand the model of electronic commerce and web based commercial operations</li> <li>Comprehend and understand the support systems of digital markets-marketing, payments, security, supply chain</li> </ol>	<p>CO1 Develop fundamental level understanding of Digital Innovation, its role, types and process</p> <p>CO2 Comprehend and relate to the social, ethical and legal issues relating to Digital transformation</p> <p>CO3 Understand and tell how cloud computing useful in collaboration of business and how it helps to cut costs</p> <p>CO4 Examine emerging trends in digital innovation process</p> <p>CO5 Understand and know about drivers and role of cloud computing in modern business</p>

## Course Outcomes

S. No.	Course Code	Course Title	Course Objective	Expected Outcome
976	MBAIT-307	E-Commerce and Digital Markets	<ol style="list-style-type: none"> <li>1. To develop an understanding about E-Commerce practices</li> <li>2. Understand the model of electronic commerce and web based commercial operations</li> <li>3. Comprehend and understand the support systems of digital markets-marketing, payments, security, supply chain</li> </ol>	CO1 Explain the benefits and types of E-Commerce business models CO2 List and describe the infrastructural requirements for setting up an E-commerce site CO3 Determine the various components of an e-marketing plan CO4 Analyze the Electronic Payment Systems and Order Fulfillment and related security issues CO5 Explain and relate to the challenges and opportunities in supply chain management system of E- Commerce
977	MBA 401	Corporate Governance and Social Responsibility	<ol style="list-style-type: none"> <li>1. To enable the students to grasp the law and ethics underlying and governing the structure and operation of the business corporation</li> <li>2. To enable the students to understand the parameters of accountability, control and reporting system by the corporate board</li> <li>3. To help the students to have an insight into the interactive relationship among various corporate and related constituents in determining directions and performance of business organizations</li> </ol>	CO1 List the role and importance of corporate governance CO2 Recognize the need for business ethics and role of business in the society CO3 Summarize the role and responsibilities of board members as well as the future of corporate governance in India CO4 Differentiate the types of different types directors CO5 Determine the scope of corporate social responsibility
978	MBA 402	Research Project	<p>Research Project will have end semester presentation. End semester presentation should be done along with the report on identification of topic for the work and the methodology adopted involving scientific research, collection and analysis of data, determining solutions highlighting individuals' contribution.</p>	CO1 Identify research Problem CO2 Examine research problems and use modern research tools/methods CO3 Analyze and review the existing literature on a research problem. CO4 Analyze and apply research methods CO5 Write technical reports.

## Course Outcomes

S. No.	Course Code	Course Title	Course Objective	Expected Outcome
979	MBA HR 403	International HRM	<ol style="list-style-type: none"> <li>1. To develop an understanding about the concept of HRM from international perspective.</li> <li>2. To understand the role of staffing, training, compensation and industrial relation in international context.</li> <li>3. To analyze the role of workforce diversity in international organizations.</li> </ol>	<p>CO1 Understand and investigate the variables that moderate differences between domestic and International HRM.</p> <p>CO2 Understand and describe issues, trends and practices in areas of international procurement, development and maintenance strategies.</p> <p>CO3 To appreciate the role of workforce diversity in the international organizations.</p> <p>CO4 Explore performance management issues globally.</p> <p>CO5 Analyze the role of women expatriate in the organization and discuss the ethical issues in global organization.</p>
980	MBAHR 404	Strategic HRM	<ol style="list-style-type: none"> <li>1. To understand the various perspective and concepts in the field of strategic management.</li> <li>2. To analyze different kind of strategies for business planning in organizations.</li> <li>3. To familiarize the concept of strategy formulation among students.</li> </ol>	<p>CO1 Understand and analyze the need and requirement of strategies in business plan.</p> <p>CO2 Analyze and apply different Procurement and Development Strategies for employees</p> <p>CO3 List and Investigate the factors affecting employees performance and compensation</p> <p>CO4 Examine the human aspect of mergers and acquisitions; Leadership, power and politics</p> <p>CO5 Illustrate the role of HR as strategic partner</p>
981	MBAHR-405	Employee Relationship Management	<ol style="list-style-type: none"> <li>1. To develop the understanding about the concept, significance and importance of industrial relations and describe its application in managerial decision.</li> <li>2. To understand and analyze the role of trade union and collective bargaining.</li> <li>3. To analyze different industrial dispute preventive and settlement machineries.</li> <li>4. To introduce the various Labor Laws and the recent changes made in it to have a deep knowledge of laws related to labour welfare</li> </ol>	<p>CO1 Understand, analyze and anticipate areas of labor-management problems.</p> <p>CO2 Recognize the need for cooperative attitude at the place of work.</p> <p>CO3 Classify legal and illegal actions and can take appropriate measures.</p> <p>CO4 Understand and practice various laws that protect worker's rights to improve worker safety, prevent child labor and increase workers' bargaining power relative to their employers.</p> <p>CO5 Demonstrate effective functioning through labour legislation.</p>

## Course Outcomes

S. No.	Course Code	Course Title	Course Objective	Expected Outcome
982	MBAHR-406	Compensation Management	<ol style="list-style-type: none"> <li>1. To understand the basic concept and nature of wage and salary administration.</li> <li>2. To appreciate the implication of legal framework associated with the system and device fair strategy to make it employees friendly.</li> <li>3. To explain the structure of compensation strategies and wage concepts and also to make relation between wages and skill levels.</li> </ol>	<p>CO1 Analyze and describe the basics concept and nature of wage and salary administration.</p> <p>CO2 Discuss the importance of legal framework in overall compensation system of the organization.</p> <p>CO3 Explain and examine performance based compensation and benefits.</p> <p>CO4 Discuss and compute the Executive Compensation in detail</p> <p>CO5 Define and investigate the role of union in Wages and Salary Administration</p>
983	MBAFM-403	International Financial Management	<ol style="list-style-type: none"> <li>1. To introduce determinants of foreign exchange exposure and interest rate parity in international market.</li> <li>2. To develop sound knowledge in managing the balance of payment and foreign direct investments.</li> <li>3. To give understanding of International Monetary fund, World Bank and Asian development bank.</li> </ol>	<p>CO1 Analyze and apply the concepts of foreign exchange market.</p> <p>CO2 Describe the structure and relationship between the economy and balance of payment.</p> <p>CO3 Understand the working of international monetary fund, World Bank and Asian development bank.</p> <p>CO4 Understand various types of foreign exchange esposure risk.</p> <p>CO5 Analyze international accounting and international taxation.</p>
984	MBAFM-404	Merger, Acquisition and Corporate Restructuring	<ol style="list-style-type: none"> <li>1. To examine the reasons for mergers, acquisitions and corporate restructuring.</li> <li>2. To understand and recognize situations in which restructuring can add significant value or create opportunity and identify the best restructuring options for a specific problem or challenge.</li> <li>3. To understand the complex accounting, tax, legal, and regulatory issues in mergers and acquisitions.</li> </ol>	<p>CO1 Understand the importance of Mergers, Acquisitions and Corporate restructuring to the business world. Understand the glossary of terms (language) used in M&amp;A, the issues, and processes involved in an M&amp;A.</p> <p>CO2 Solve different practical problems in mergers and acquisition appraisal techniques.</p> <p>CO3 Understand practically the various options available for funding of mergers and analyze them.</p> <p>CO4 Understand practically the accounting &amp; tax aspects of mergers &amp; acquisitions</p> <p>CO5 Understand the Legal &amp; Strategic issues in an integrative manner and the interplay of global and cross-cultural factors in the context of mergers, acquisitions and restructuring.</p>

## Course Outcomes

S. No.	Course Code	Course Title	Course Objective	Expected Outcome
985	MBAFM-405	Financial Derivatives Management	<ol style="list-style-type: none"> <li>1. To impart comprehensive knowledge of terminology in the field of Derivatives.</li> <li>2. To give knowledge of different types of financial instruments like forward, future, options and swap.</li> <li>3. To produce industry ready graduates having sound knowledge of trading in derivative markets.</li> </ol>	<p>CO1 Describe derivatives and characteristics of derivatives markets.</p> <p>CO2 Apply contextual knowledge of future contracts and future markets in India.</p> <p>CO3 Describe the forward contracts and forward trading mechanism.</p> <p>CO4 Explain various types of options.</p> <p>CO5 Analyse Guideline and Identify business opportunities of derivative trading.</p>
986	MBAFM-406	Financial Strategic Decisions	<ol style="list-style-type: none"> <li>1. To develop framework for better understanding of financial principles and practices in corporate world.</li> <li>2. To impart knowledge for understanding the working of financial markets.</li> <li>3. To understand the financial system prevailing in India.</li> </ol>	<p>CO1 Explain terms and concepts related to financial strategic decision.</p> <p>CO2 Analyze the financial system of India.</p> <p>CO3 Recognize various instruments of money market.</p> <p>CO4 Analyze the importance of strategic decision making in finance.</p> <p>CO5 Analyze and evaluate the corporate valuations.</p>
987	MBAMKT-403	Product and Brand Management	<ol style="list-style-type: none"> <li>1. To fundamentals of Product and Brand Management.</li> <li>2. To make students understand principles of Branding</li> <li>3. To acquaint students with implications of planning, implementing and evaluating branding strategies.</li> </ol>	<p>CO1 Describe New product development process</p> <p>CO2 Explain concept of Researching and Designing New Product</p> <p>CO3 Describe Creating Brand Success and Building Brand Equity</p> <p>CO4 Summarize and define Brand Identity, Positioning and Image</p> <p>CO5 Discuss the theoretical aspects of Brand Repositioning and Brand Extension</p>
988	MBAMKT-404	Digital and Social Media Marketing	<ol style="list-style-type: none"> <li>1. To provide the skills and knowledge necessary in planning digital marketing campaigns within organizations.</li> <li>2. To focus on integrating social media into the communications strategy and integrated communications mix.</li> <li>3. To provide the basics of content creation and management for social media including blogs, podcasts, and posts.</li> </ol>	<p>CO1 Examine the ethical and legal issues in digital marketing and digital marketing research</p> <p>CO2 Develop digital marketing strategies by interpreting the results of SEO</p> <p>CO3 Identify the elements of social media marketing and social media analytics</p> <p>CO4 Identify trends in social media marketing</p> <p>CO5 Assess the efficiency of on-site web analytics</p>

## Course Outcomes

S. No.	Course Code	Course Title	Course Objective	Expected Outcome
989	MBAMKT-405	Customer Relationship Management	<ol style="list-style-type: none"> <li>1. To understand the role, process, practice and strategic importance of customer relationship management in the prevailing business environment</li> <li>2. To get familiar with the evolution and challenges of the concept of developing and managing customer relations</li> <li>3. To be able to understand the theoretical base and process of customer retention through strategic CRM and IT enabled CRM</li> </ol>	<p>CO1 Understand the concept and importance of customer relationship management for increasing the profitability of modern business ventures</p> <p>CO2 Analyze the tool and data analysis techniques for CRM</p> <p>CO3 Understand the evolutions and challenges of CRM</p> <p>CO4 Understand and relate to CRM as a problem solving technique for IT enabled and web based marketing</p> <p>CO5 Understand complaint handling process and retention strategies of CRM</p>
990	MBAMKT-406	International Marketing Management	<ol style="list-style-type: none"> <li>1. To possess the theoretical concepts of international Marketing and be acquainted with trade barriers of international markets.</li> <li>2. To understand the impact of cultural, political and legal differences on the product and the company.</li> <li>3. To understand different forms of international marketing and know about the international distribution.</li> </ol>	<p>CO1 Understand and Describe factors effecting the international marketing environment</p> <p>CO2 Explain, Apply and investigate various strategies for entry in international market</p> <p>CO3 Describe and apply Product development and related pricing strategies</p> <p>CO4 Explain and apply the strategies of distribution management and promotion in international markets</p> <p>CO5 Formulate and plan implementation for international marketing strategies</p>
991	MBAIT-403	IT Consulting	<ol style="list-style-type: none"> <li>1. To define the generic consultancy assignment life cycle;</li> <li>2. To scope, propose and contract consultancy assignments</li> <li>3. To structure, plan and control consultancy assignments</li> <li>4. To apply quality control and measurement within IT consultancy assignments.</li> </ol>	<p>CO1 Describe the structure, drivers, principles and models of IT based consultancy projects</p> <p>CO2 Explain the phases of IT based consultancy life cycle</p> <p>CO3 Scope, propose and contract consultancy assignments in information technology based industry</p> <p>CO4 Apply quality control and measurement within IT consultancy assignments</p> <p>CO5 Structure, plan and control IT consultancy assignments</p>

## Course Outcomes

S. No.	Course Code	Course Title	Course Objective	Expected Outcome
992	MBAIT-404	Managing Digital Platforms	<ol style="list-style-type: none"> <li>1. To understand the Need and Significance of IT resource in management of digitally enabled platforms for commercial activities</li> <li>2. Understand the process of determining IT and Information System's Resource Needs in web based business</li> <li>3. IT &amp;Information Systems resources applications and issues faced during the process</li> </ol>	<p>CO1 Identify and describe the core and allied functions of IT/ITeS and Telecom based services in India</p> <p>CO2 Analyze and plan the requirements of setting up web based platform for innovations</p> <p>CO3 Comprehend and work on the factors involving innovation management on web-based platform</p> <p>CO4 Assess IT and Information System's Resource Needs and their usage in managing web-based Business</p> <p>CO5 Determine, Plan and Arrange for IT base system's resource needs</p>
993	MBAIT-405	Strategic Management of IT	<ol style="list-style-type: none"> <li>1. To understand the strategic use of Information Technology for Competitive Advantage</li> <li>2. To understand Emerging trends of information technology to devise organization /business strategy</li> </ol>	<p>CO1 Develop a fundamental understanding of the ways IT can provide a competitive edge to organizations</p> <p>CO2 Understand the use of Information Technology in business processes</p> <p>CO3 Examine use of IT tools for in business decision making</p> <p>CO4 Develop the ability to use IT as a real life problem solving tool in business organizations</p> <p>CO5 Assess the strategic applicability of IT tools in contemporary business situations.</p>
994	MBAIT-407	System Analysis and Design	<ol style="list-style-type: none"> <li>1. Have an insight of the systems concept and the process involving the analysis and design of the same.</li> <li>2. Understand the systems implementation and scheduling.</li> </ol>	<p>CO1 understand and describe in detail software development process and with issues /challenges faced during the process</p> <p>CO2 Describe and Illustrate the process of analyzing, designing, verification and implementation of System Design</p> <p>CO3 Sequence and design, prototyping, verification ,and validation of information systems</p> <p>CO4 Asses, plan and organize for elements of a reliable , high quality software</p> <p>CO5 Understanding and implementation of quality enhancement practices in System Analysis and Design</p>

## Course Outcomes

S. No.	Course Code	Course Title	Course Objective	Expected Outcome
995	MPT101	Basic Medical Sciences	<ul style="list-style-type: none"> <li>• Understanding of gross anatomy of various body parts with their respective physiology.</li> <li>• Application of knowledge of anatomy to learn evaluation and application of physical therapy.</li> <li>• Major emphasis of learning is towards Musculoskeletal, cardio-respiratory and Nervous system.</li> </ul>	<p>CO1: Appreciate the teams approach to learning in complex areas.</p> <p>CO2: Critically evaluates research literature in the area of anatomy and physiology and apply this information towards understanding the mechanisms operating in musculoskeletal conditions resulting from injury or disease.</p> <p>CO3: Appreciate the importance and development of good written and presentation skills to aid group learning.</p> <p>CO4: Relate pathological findings or changes in various conditions.</p> <p>CO5: Use critical thinking and scientific problem-solving skills, to make decisions.</p>
996	MPT102	Biomechanics	<ul style="list-style-type: none"> <li>• To understand the basic principles of biomechanics related to human body and applying it with exercise therapy.</li> <li>• To understand the structure and function of joints.</li> <li>• To understand the normal gait and posture.</li> </ul>	<p>CO1: Understand the relationship between structure and function of the musculoskeletal system of the healthy and diseased subjects.</p> <p>CO2: Develop ability to analyze mechanisms underlying selected musculoskeletal conditions resulting from injury or disease processes.</p> <p>CO3: Understand the anatomy / applied anatomy basis for clinical testing of musculo skeletal structures.</p> <p>CO4: Demonstrate clinical decision making ability and provide appropriate patient care.</p> <p>CO5: Understand the kinetic concepts including inertia, force, torque, impulse and identify the major factors involved in the angular kinematics of human movement.</p>

## Course Outcomes

S. No.	Course Code	Course Title	Course Objective	Expected Outcome
997	MPT 103	Physiotherapy Methods	<ul style="list-style-type: none"> <li>• Acquire the knowledge and skill of various therapeutic exercise .</li> <li>• Acquire the knowledge and skill of various approaches of Manual therapy for joints of the limbs/spine.</li> <li>• Able to integrate the manual therapies to rehabilitate the Mechanical Neuro- Muscular problems.</li> <li>• Able to interpret the E.M.G. and nerve conduction studies with appropriate clinical reasoning.</li> <li>• Expertise in the skill of using various electrical currents for the purpose of Electro-diagnosis able to interpret the same with appropriate clinical reasoning.</li> <li>• Able to integrate theoretical knowledge with clinical practice.</li> </ul>	<p>CO1: Appreciate the team approach to learning in complex areas and the need for intercultural sensitivity and understanding particularly of different learning styles.</p> <p>CO2: Appreciate the importance of and development of good written and verbal communication skills to articulate knowledge in exercise and electrophysiology.</p> <p>CO3: Able to evaluate and synthesize research and professional literature and apply this information to novel situations.</p> <p>CO4: Describe the concepts and knowledge of the general Principle of therapeutic exercises, Massage and mobilization.</p> <p>CO5: Explain the technique and concept of electric modality use in physiotherapy practice.</p>
998	MPT 104	Research Methodology & Biostatistics	<ul style="list-style-type: none"> <li>• Understand some basic concepts of research and its methodologies.</li> <li>• Identify appropriate research topics.</li> <li>• Select and define appropriate research problem and parameters.</li> <li>• Understand some basic concepts of biostatistics, research tools and data analysis.</li> <li>• Write a research report and thesis.</li> </ul>	<p>CO1: Apply the principles of research and biostatistics to health practice including the design and implementation of health related research studies.</p> <p>CO2: Plan and execute a research study, including clinical trials.</p> <p>CO3: Use or organize bio-statistical analysis using computers and software and prepare reports or papers and critically evaluate research activities.</p> <p>CO4: Understand the method of data collection.</p> <p>CO5: Evaluate and Formulate Research questions.</p>

## Course Outcomes

S. No.	Course Code	Course Title	Course Objective	Expected Outcome
999	MPT 105	Basics of Exercise Physiology and Nutrition	<ul style="list-style-type: none"> <li>• Understand the physiology of exercise.</li> <li>• Understand the role of nutrition in exercises.</li> <li>• Understand the various energy systems in body.</li> </ul>	<p>CO1: Acquire sound theoretical knowledge of muscle physiology including muscle structure, mechanical properties, fiber types, neural activation, soreness, damage and adaptation, and the effects of aging, immobile/disuse, training, fatigue and spasticity on muscle.</p> <p>CO2: Acquire theoretical knowledge of exercise physiology including exercise metabolism, cardio-respiratory response to exercise, energy, nutrition and environmental factors in exercise.</p> <p>CO3: Critically evaluate and synthesis research and professional literature relating to a chosen topic in the muscle/exercise physiology to analyze and interpret electro diagnostic procedures.</p> <p>CO4: Understand acid base balance in the body.</p> <p>CO5: Know the various hormonal responses of the body during exercise.</p>
1000	MPT 106A	Assessment and Evaluation in Neuro-physiotherapy & Physiotherapy in Pediatric Neurology	<ul style="list-style-type: none"> <li>• To understand the assessment and evaluation in neurology.</li> <li>• To understand the balance, equilibrium and coordination.</li> <li>• To understand assessment of pediatric conditions.</li> </ul>	<p>CO1: Understand the basic neurological conditions which commonly cause disability and their management.</p> <p>CO2: Apply neurological assessment scale.</p> <p>CO3: Assess and evaluate the neurological conditions.</p> <p>CO4: Know the etiology, Classification, Pathology, Clinical Features, Complications, Surgical &amp; Non Surgical Management of various Neurological Conditions.</p> <p>CO5: Understand the development of a normal child.</p>
1001	MPT106B	Assessment and Evaluation in Musculoskeletal Physiotherapy & Physiotherapy In Non-Traumatic Orthopedic Conditions	<ul style="list-style-type: none"> <li>• To understand human skeletal system and its anatomy</li> <li>• To assess, examine and evaluate various orthopedics conditions</li> <li>• To understand various physiotherapy treatment methods used in orthopedic conditions</li> </ul>	<p>CO1: Integrate the knowledge gained by the students in clinical orthopedics with skills gained to apply these in clinical situation of dysfunction and Musculo-skeletal pathology.</p> <p>CO2: Identify disability due to Musculoskeletal dysfunction, set treatment goals and apply their skills gained in exercise therapy, electrotherapy and massage in clinical situations to restore musculoskeletal function.</p> <p>CO3: Assess and evaluate Upper Extremity.</p> <p>CO4: Assess and evaluate Lower Extremity.</p> <p>CO5: Assess and evaluate Spine Extremity.</p>

## Course Outcomes

S. No.	Course Code	Course Title	Course Objective	Expected Outcome
1002	MPT106C	Sports Traumatology1 & Sports Traumatology 2	<ul style="list-style-type: none"> <li>• To understand the mechanism of sports injury.</li> <li>• To gain knowledge about prevention technique from sports injury.</li> <li>to learn the details sports rehabilitation.</li> </ul>	CO1: Student able to do diagnosis of sports injury. CO2: Acquire knowledge on prevention and health promotion. CO3: Assess and provide physiotherapeutic techniques in Sports conditions for relief of pain, relaxation, conditioning and posture. CO4: Know how to prevent and manage sports injuries. CO5: Understand the mechanism of sports injury.
1003	MPT 201	Bio-Engineering and Rehabilitation Principles	<ul style="list-style-type: none"> <li>• To identify the role of different professional in the field of rehab.</li> <li>• To understand the major services provided in rehabilitation.</li> <li>• To acquire knowledge of orthotic and prosthesis.</li> </ul>	CO1: Understand the irrole in the management of the disability within the rehabilitation team and understand the concept of team approach in rehabilitation. CO2: Identify the residual potentials in patients with partial or total disability (temporary or permanent) and understand the use of various orthotics and prosthetics devices. CO3: Formulate appropriate goals (long & short term) in treatment & rehabilitation and prescribe, check - out and train the uses of various rehabilitation aids. CO4: Understand all services provided by various govt. agencies. CO5: Assess and evaluate Disability.

## Course Outcomes

S. No.	Course Code	Course Title	Course Objective	Expected Outcome
1004	MPT 202	Applied Exercise Physiology	<ul style="list-style-type: none"> <li>• To obtain knowledge of muscle physiology and effects of aging.</li> <li>• To acquire theoretical knowledge of exercise physiology, nutrition and environmental factors in exercise.</li> <li>• To understand the ECG interpretation, exercise testing, exercise prescription and nutrition.</li> <li>• To know the importance of ethically-grounded care for diverse clients, patients and/or athletes.</li> </ul>	<p>CO1: Acquire sound theoretical knowledge of muscle physiology including muscle structure, mechanical properties, fiber types, neural activation, soreness, damage and adaptation, and the effects of aging, immobile/disuse, training, fatigue and spasticity on muscle.</p> <p>CO2: Acquire theoretical knowledge of exercise physiology including exercise metabolism, cardio-respiratory response to exercise, energy, nutrition and environmental factors in exercise.</p> <p>CO3: Critically evaluate and synthesis research and professional literature relating to a chosen topic in the muscle/exercise physiology to analyze and interpret electro diagnostic procedures.</p> <p>CO4: Demonstrate knowledge in the exercise sciences including ECG interpretation, exercise testing, exercise prescription and nutrition.</p> <p>CO5: Understand the importance of ethically-grounded care for diverse clients, patients and/or athletes</p>
1005	MPT 203A	Physiotherapy & Rehabilitation in Neurological Disorders -1	<ul style="list-style-type: none"> <li>• To understand signs and symptoms of neurological disorders.</li> <li>• To understand the infections of brain.</li> <li>• To understand movement and vascular disorders of brain.</li> </ul>	<p>CO1: Identify the diseases of brain.</p> <p>CO2: Differentiate the diagnosis of the disease for brain.</p> <p>CO3: Evaluate conditions and prescribe appropriate physiotherapy treatment.</p> <p>CO4: Differentiate the various brain infections.</p> <p>CO5: Assess and manage movement disorders.</p>
1006	MPT 204A	Physiotherapy & Rehabilitation in Neurological Disorders -II	<ul style="list-style-type: none"> <li>• To learn different physiotherapeutic strategies that can assist recovery of normal function from neurological dysfunction.</li> <li>• To understand the conservative and surgical management of neurological condition as relevant to physiotherapy.</li> <li>• To correlate the knowledge gained in understanding the neurological dysfunction.</li> </ul>	<p>CO1: Formulate a rationalized physiotherapy plan for the patient.</p> <p>CO2: Compare &amp; contrast the outcome of various physiotherapy treatment approaches to rehabilitate patient.</p> <p>CO3: Implement necessary physiotherapy treatment, document the status of the patients as written records.</p> <p>CO4: Assess and manage peripheral nerve disorders.</p> <p>CO5: Differentiate nutritional deficiency disorders.</p>

## Course Outcomes

S. No.	Course Code	Course Title	Course Objective	Expected Outcome
1007	MPT 205A	Current Concept in Neuro-Physiotherapy	<ul style="list-style-type: none"> <li>• To understand the recent concepts in treatment of neurological conditions.</li> </ul>	<p>CO1: Understand the changing knowledgebase in neurology and the international context and sensitivities of the area.</p> <p>CO2: Evaluate and synthesize research and professional literature and apply this information to clinical situation.</p> <p>CO3: Articulate their knowledge, understanding and managing neurological patients.</p> <p>CO4: Apply neurological approaches while treating a patient.</p> <p>CO5: Understand the basic principles of various treatment techniques.</p>
1008	MPT 203B	Physiotherapy in Traumatic Orthopedic Conditions	<ul style="list-style-type: none"> <li>• To understand human anatomy and physiology of skeletal system</li> <li>• To evaluate, assess and examine the musculoskeletal conditions</li> <li>• To understand different surgeries for musculoskeletal system in different conditions.</li> </ul>	<p>CO1: Understand the basic sciences and their integration with musculoskeletal physiotherapy clinical practice.</p> <p>CO2: Apply sound theoretical and practical knowledge and understanding of musculoskeletal system.</p> <p>CO3: Perform an appropriate subjective and physical examination.</p> <p>CO4: Use suitable analytical skills to evaluate data obtained.</p> <p>CO5: Plan and execute physiotherapy treatment in musculoskeletal system.</p>
1009	MPT 204B	Physiotherapy in Vertebral Disorders	<ul style="list-style-type: none"> <li>• To understand human anatomy and physiology of vertebrae</li> <li>• To evaluate, assess and examine the spinal conditions</li> <li>• To understand different surgeries for spine.</li> </ul>	<p>CO1: Understand of the basic sciences and their integration with spinal conditions.</p> <p>CO2: Apply theoretical and practical knowledge and understanding vertebral system.</p> <p>CO3: Perform an appropriate subjective and physical examination of spinal conditions.</p> <p>CO4: Use suitable analytical skills to evaluate data obtained.</p> <p>CO5: Plan and execute physiotherapy treatment in spinal disorders.</p>

## Course Outcomes

S. No.	Course Code	Course Title	Course Objective	Expected Outcome
1010	MPT 205B	Current Concepts in Ortho Physiotherapy	<ul style="list-style-type: none"> <li>• To understand skeletal system and biomechanics</li> <li>• To diagnose, evaluate and assess musculoskeletal system through different techniques</li> <li>• To understand different techniques used in management of physiotherapy treatment</li> </ul>	CO1: Understand the current concepts in musculoskeletal physiotherapy. CO2: Understand theoretical and practical knowledge and understanding of pain management in musculoskeletal system. CO3: Perform an appropriate subjective and physical examination in order to apply various treatment technique. CO4: Apply soft tissue release technique to treat conditions. CO5: Execute techniques of body composition analysis.
1011	MPT 203C	Non-Traumatic Medical Conditions of athletes	<ul style="list-style-type: none"> <li>• To understand medical condition related to athlete.</li> <li>• To understand impact of medical conditions in athlete.</li> <li>• To learn how to manage non traumatic medical condition in athlete.</li> </ul>	CO1 Identify the biomechanics of specific sports and the medical conditions associated in a particular sport. CO2 Select strategies and techniques to prevent exercise induced non traumatic medical conditions CO3 Evaluate sport specific conditions and evidence based treatment protocols to return to sports CO4 Formulate and publish research articles CO5 Evaluate and examine the sports related medical conditions affecting sports performances of an athlete and also to rehabilitate the subjects with their ailments with effective means
1012	MPT 204C	Sports Psychology	<ul style="list-style-type: none"> <li>• To understand Sports Psychology of a athlete.</li> <li>• to understand the psychological requirement of an athlete in competition.</li> <li>• to learn the psychological measure to developed effectiveness of the performance.</li> </ul>	CO1 Understand psychological aspects of optimal athletic performance, psychological care and wellbeing of athletes CO2 Identify techniques to motivate the athletes which will help to improve their performance CO3 Evaluate which technique (counseling, instructing, mental conditioning etc.) will help an athlete with anxiety and aggression in order to deal with sports injuries. CO4 Utilize communication skills while working in the sports medicine team. CO5 Evaluate evidence based psychological regimes with understanding the concepts and role of sports related psychological techniques and other relevant current concepts of treatment in the field of sports Psychology

## Course Outcomes

S. No.	Course Code	Course Title	Course Objective	Expected Outcome
1013	MPT 205C	Current concept of Sports Medicine Physiotherapy	<ul style="list-style-type: none"> <li>• To understand new concept in sports physiotherapy.</li> <li>• To understand exercise for special categories of athlete.</li> <li>• To identify the proper equipment and assistive device for the athlete.</li> </ul>	<p>CO1 Understand the current concept of biomechanical assessment of sports and motor control in sports activities</p> <p>CO2 Understand the role of sports physiotherapist in the sports team training and competition setting and the value of communication in the Sports Medicine Team approach.</p> <p>CO3 Select specific screening and preventive conditioning programs for common sports and injuries</p> <p>CO4 Develop independent research publications and critically analyze already published articles.</p> <p>CO5 Evaluate evidence based treatment protocols and other relevant current concepts of treatment in the field of sports physiotherapy</p>
1014	MPT 206	Major Project Cum Dissertation	<p>To identification of the problem</p> <p>To use modern research tools/methods.</p> <p>To design and conduct experiments and identify the solution of the problem/s.</p>	<p>CO1: Handle research problems and use modern research tools/methods.</p> <p>CO2: Analyze and review the existing literature on a research problem.</p> <p>CO3: Design and conduct experiments.</p> <p>CO4: Write dissertation and technical reports.</p> <p>CO5: Publish research papers.</p>
1015	MTCSCS 101	Mathematical Foundations of Computer Science	<ul style="list-style-type: none"> <li>• To understand the mathematical fundamentals that is prerequisites for a variety of courses like Data mining, Network protocols, analysis of Web traffic, Computer security, Software engineering, Computer architecture, operating systems, distributed systems, Bioinformatics, Machine learning.</li> <li>• To develop the understanding of the mathematical and logical basis to many modern techniques in information technology like machine learning, programming language design, and concurrency.</li> <li>• To study various sampling and classification problems.</li> </ul>	<p>CO1: Apply the concepts learned in fundamental courses such as Discrete Mathematics, in a theoretical setting; in particular, the application of proof techniques.</p> <p>CO2: Demonstrate abstract models of computing, including deterministic (DFA), non-deterministic (NFA) and their power to recognize the languages.</p> <p>CO3: Construct pushdown automata and the equivalent context free grammars.</p> <p>CO4: Understand the concept of different types of graphs and their uses.</p> <p>CO5: Compute probabilities of interesting events and other vital characteristics, and make appropriate conclusions and forecasts</p> <p>CO6: Apply linear algebra concepts in two-dimensional graphics transformations in various applications</p>

## Course Outcomes

S. No.	Course Code	Course Title	Course Objective	Expected Outcome
1016	MTCSCS 102	Advanced Data Structures	<ul style="list-style-type: none"> <li>• To choose appropriate data structures, understand the ADT/libraries, and use it to design algorithms for a specific problem.</li> <li>• To understand the necessary mathematical abstraction to solve problems.</li> <li>• To familiarize students with advanced paradigms and data structure used to solve algorithmic problems</li> <li>• To come up with analysis of efficiency and proofs of correctness.</li> </ul>	CO1: Understand the implementation of symbol table using hashing techniques. CO2: Develop and analyze algorithms for red-black trees, B-trees and Splay trees, algorithms for text processing applications. CO3: Apply the algorithms and design techniques to solve problems; analyze the complexities of various problems in different domains. CO4: Study and Solve Problem using Dynamic Programming and Greedy Method Algorithms. CO5: Study and Summarize concept of Lower Bound, NP Hard and NP Complete Problems CO6: Identify suitable data structures and develop algorithms for computational geometry problems.
1017	MTCSCS 103A	Machine Learning	<ul style="list-style-type: none"> <li>• To learn the concept of how to learn patterns and concepts from data without being explicitly programmed in various IOT nodes.</li> <li>• To design and analyse various machine learning algorithms and techniques with a modern outlook focusing on recent advances.</li> <li>• To explore supervised and unsupervised learning paradigms of machine learning.</li> <li>• To explore Deep learning technique and various feature extraction strategies.</li> </ul>	CO1: Solve complicated problems using biological neuron system & calculate equation of terminal network. CO2: Recognize the characteristics of machine learning that make it useful to real-world problems. Characterize machine learning algorithms as supervised, semi-supervised, and unsupervised. CO3: Understand algorithms for learning Bayesian networks. Understand reinforcement learning algorithms. CO4: Design and implement neural network systems. CO5: Describe the relation between real brains and simple artificial neural network models. CO6: Explain and contrast the most common architectures and learning algorithms for Multi-Layer Perceptrons, Radial-Basis Function Networks and Kohonen Self-Organising Maps.

## Course Outcomes

S. No.	Course Code	Course Title	Course Objective	Expected Outcome
1018	MTCSCS 103B	Wireless Sensor Networks	<ul style="list-style-type: none"> <li>• To understand the architect of sensor networks for various application setups.</li> <li>• To devise appropriate data dissemination protocols and model links cost.</li> <li>• To understand the fundamental concepts of wireless sensor networks and have a basic knowledge of the various protocols at various layers.</li> <li>• To evaluate the performance of sensor networks and identify bottlenecks.</li> </ul>	CO1: Understand and demonstrate the principles of Sensor Design, Sensors with its applications CO2: Learn the architecture and placement strategies of Sensors, wireless sensor networks CO3: Select and apply appropriate principles for data collection and aggregation methods for problem solving, routing and congestion algorithms CO4: Design, develop and carry out performance analysis of sensors on specific applications CO5: Explore and implement solutions to real world problems using sensor devices, enumerating its principles of working CO6: Apply the advance engineering principles for the critical analysis of sensor design
1019	MTCSCS 103C	Introduction to Intelligent Systems	<ul style="list-style-type: none"> <li>• To introduce to the field of Artificial Intelligence (AI) with emphasis on its use to solve real world problems for which solutions are difficult to express using the traditional algorithmic approach.</li> <li>• To explore the essential theory behind methodologies for developing systems that demonstrate intelligent behaviour including dealing with uncertainty learning from experience and following problem solving strategies found in nature.</li> </ul>	CO1: Analyze and compare the relative merits of a variety of AI problem and solving techniques CO2: Formulate problems so that exploratory search can be applied, Able to Demonstrate knowledge of the fundamental principles of intelligent systems. CO3: Implement optimal, heuristic and memory bounded search techniques. CO4: Represent knowledge using formal logic and design algorithms to work in a semi-observable environment using logical reasoning. CO5: Design and develop practical algorithms for solving real-life planning problems. CO6: Implement probabilistic reasoning techniques to work in uncertain environments.

## Course Outcomes

S. No.	Course Code	Course Title	Course Objective	Expected Outcome
1020	MTCSCS 104A	Data Science	<ul style="list-style-type: none"> <li>• To attain the knowledge and expertise to become a proficient data scientist.</li> <li>• To demonstrate an understanding of statistics and machine learning concepts that are vital for data science</li> <li>• To produce Python code to statistically analyse a dataset;</li> <li>• To critically evaluate data visualisations based on their design and use for communicating stories from data.</li> </ul>	<p>CO1: Apply knowledge of data science process and its tool kit.</p> <p>CO2: Explain how data is collected, managed and stored for data science;</p> <p>CO3: Understand the concept of statistics and distribution.</p> <p>CO4: Understand the Data visualization, their types and encoding decoding.</p> <p>CO5: Understand the key concepts in data science, including their real-world applications and the toolkit used by data scientists</p> <p>CO6: Implement data collection and management scripts using Python on Spyder (Anaconda3).</p>
1021	MTCSCS 104B	Distributed Systems	<ul style="list-style-type: none"> <li>• To introduce the fundamental concepts and issues of managing large volume of shared data in a parallel and distributed environment, and to provide insight into related research problems.</li> </ul>	<p>CO1: Identify the advantages and challenges in designing distributed algorithms for different primitives like mutual exclusion, deadlock detection, agreement, etc.</p> <p>CO2: Examine the fundamental principles of distributed systems</p> <p>CO3: Design and develop distributed programs using sockets and RPC/RMI.</p> <p>CO4: Differentiate between different types of faults and fault handling techniques in order to implement fault tolerant systems.</p> <p>CO5: Analyze different algorithms and techniques for the design and development of distributed systems subject to specific design and performance constraints.</p> <p>CO6: Able to understand relational database management systems, normalization to make efficient retrieval from database and query.</p>

## Course Outcomes

S. No.	Course Code	Course Title	Course Objective	Expected Outcome
1022	MTCSCS 104C	Advanced Wireless and Mobile Networks	<ul style="list-style-type: none"> <li>• The students should get familiar with the wireless/mobile market and the future needs and challenges.</li> <li>• To get familiar with key concepts of wireless networks, standards, technologies and their basic operations</li> <li>• To learn how to design and analyse various medium access</li> <li>• To learn how to evaluate MAC and network protocols using network simulation software tools.</li> <li>• The students should get familiar with the wireless/mobile market and the future needs and challenges.</li> </ul>	<p>CO1: Demonstrate advanced knowledge of networking and wireless networking</p> <p>CO2: Understand various types of wireless networks, standards, operations and use cases.</p> <p>CO3: Be able to design WLAN, WPAN, WWAN, Cellular based upon underlying propagation and performance analysis.</p> <p>CO4: Demonstrate knowledge of protocols used in wireless networks and</p> <p>CO5: Learn simulating wireless networks.</p> <p>CO6: Design wireless networks exploring trade-offs between wire line and wireless links. Develop mobile applications to solve some of the real world problems.</p>
1023	MTCSCS 105	Research Methodology and IPR	<ul style="list-style-type: none"> <li>• To understand research problem formulation.</li> <li>• To analyze research related information</li> <li>• To follow research ethics</li> <li>• To understand that today's world is controlled by Computer, Information Technology, but tomorrow world will be ruled by ideas, concept, and creativity.</li> <li>• To understanding that when IPR would take such important place in growth of individuals &amp; nation, it is needless to emphasize the need of information about Intellectual Property Right to be promoted among students in general &amp; engineering in particular.</li> <li>• To understand that IPR protection provides an incentive to inventors for further research work and investment in R &amp; D, which leads to creation of new and better products, and in turn brings about, economic growth and social benefits.</li> </ul>	<p>CO1: Understand research problem formulation. Analyze research related information &amp; Follow research ethics.</p> <p>CO2: Understand that today's world is controlled by Computer, Information Technology, but tomorrow world will be ruled by ideas, concept, and creativity.</p> <p>CO3: Understanding that when IPR would take such important place in growth of individuals &amp; nation, it is needless to emphasize the need of information about Intellectual Property Right to be promoted among students in general &amp; engineering in particular.</p> <p>CO4: Understand that IPR protection provides an incentive to inventors for further research work and investment in R &amp; D, which leads to creation of new and better products, and in turn brings about, economic growth and social benefits.</p>

## Course Outcomes

S. No.	Course Code	Course Title	Course Objective	Expected Outcome
1024	MTCSCS 106	Audit Course - 1 AUDIT 1 and 2 : English for Research Paper Writing AUDIT 1 and 2: Disaster Management AUDIT 1 and 2 : Sanskrit For Technical Knowledge AUDIT 1 and 2 : Value Education AUDIT 1 and 2 : Constitution Of India AUDIT 1 and 2 : Pedagogy Studies AUDIT 1 and 2: Stress Management by Yoga AUDIT 1 and 2: Personality Development through Life	<ul style="list-style-type: none"> <li>• To learn to achieve the highest goal happily</li> <li>• To become a person with stable mind, pleasing personality and determination</li> <li>• To awaken wisdom in students</li> </ul>	CO1: Knowledge of Neetisatakam - Holistic development of personality. CO2: Approach to day to day work and duties. CO3: Understanding the Theory of Statements of basic knowledge. CO4: Understanding the Personality of Role model. Shrimad Bhagwad Geeta. CO5: Study of Personality Development through Life Enlightenment Skills.

## Course Outcomes

S. No.	Course Code	Course Title	Course Objective	Expected Outcome
1025	MTCSCS 107	Advanced Data Structures Lab	<ul style="list-style-type: none"> <li>• To choose appropriate data structures, understand the ADT/libraries, and use it to design algorithms for a specific problem.</li> <li>• To understand the necessary mathematical abstraction to solve problems.</li> <li>• To familiarize students with advanced paradigms and data structure used to solve algorithmic problems</li> <li>• To come up with analysis of efficiency and proofs of correctness.</li> <li>• To perform various operations such as insertion, deletion, display on single linked lists.</li> <li>• To perform different types of searching techniques on a given list</li> <li>• To perform different types of sorting on a given list</li> <li>• To convert the given infix expression to postfix expression</li> <li>• To perform various operations on graphs</li> <li>• To implement dictionaries using hashing technique</li> <li>• To perform various operations on binary heap.</li> <li>• To perform various operations on Binary search tree.</li> <li>• To perform operations on AVL trees.</li> <li>• To perform various operations on B-tree.</li> </ul>	<p>CO1: Understand the implementation of symbol table using hashing techniques.</p> <p>CO2: Develop and analyze algorithms for red-black trees, B-trees and Splay trees, algorithms for text processing applications.</p> <p>CO3: Apply the algorithms and design techniques to solve problems; analyze the complexities of various problems in different domains.</p> <p>CO4: Study and Solve Problem using Dynamic Programming and Greedy Method Algorithms.</p> <p>CO5: Study and Summarize concept of Lower Bound, NP Hard and NP Complete Problems</p> <p>CO6: Identify suitable data structures and develop algorithms for computational geometry problem.</p>

## Course Outcomes

S. No.	Course Code	Course Title	Course Objective	Expected Outcome
1026	MTCSCS 108	Distributed Systems Lab	<ul style="list-style-type: none"> <li>• To introduce the fundamental concepts and issues of managing large volume of shared data in a parallel and distributed environment, and to provide insight into related research problems.</li> </ul>	<p>CO1: Identify the advantages and challenges in designing distributed algorithms for different primitives like mutual exclusion, deadlock detection, agreement, etc.</p> <p>CO2: Examine the fundamental principles of distributed systems</p> <p>CO3: Design and develop distributed programs using sockets and RPC/RMI.</p> <p>CO4: Differentiate between different types of faults and fault handling techniques in order to implement fault tolerant systems.</p> <p>CO5: Analyze different algorithms and techniques for the design and development of distributed systems subject to specific design and performance constraints.</p> <p>CO6: Able to understand relational database management systems, normalization to make efficient retrieval from database and query.</p>
1027	MTCSCS 201	Information Security System	<ul style="list-style-type: none"> <li>• This course will cover the concept of security , types of attack experienced, encryption and authentication for deal with attacks, what is data compression, need and techniques of data compression</li> </ul>	<p>CO1: Apply knowledge of plaintext, cipher text, RSA and other cryptographic algorithm, Key Distribution to various Network Models</p> <p>CO2: Apply Communication Model in Computer Engineering Domain</p> <p>CO3: Study Various models for data compression</p>
1028	MTCSCS 202	Soft Computing	<ul style="list-style-type: none"> <li>• To introduce soft computing concepts and techniques and foster their abilities in designing appropriate technique for a given scenario.</li> <li>• To implement soft computing based solutions for real-world problems.</li> <li>• To give students knowledge of non-traditional technologies and fundamentals of artificial neural networks, fuzzy sets, fuzzy logic, genetic algorithms.</li> <li>• To provide student a hand-on experience on MATLAB to implement various strategies.</li> </ul>	<p>CO1: Identify and describe soft computing techniques and their roles in building intelligent machines</p> <p>CO2: Apply fuzzy logic and reasoning to handle uncertainty and solve various engineering problems.</p> <p>CO3: Apply genetic algorithms to combinatorial optimization problems.</p> <p>CO4: Evaluate and compare solutions by various soft computing approaches for a given problem.</p>

## Course Outcomes

S. No.	Course Code	Course Title	Course Objective	Expected Outcome
1029	MTCSCS 203A	Data Preparation and Analysis	<ul style="list-style-type: none"> <li>• To prepare the data for analysis and develop meaningful Data Visualizations</li> </ul>	CO1: Extract the data for performing the Analysis. CO2: Work with Big Data platforms and explore the techniques CO3: Designing the efficient algorithms for mining the data from large volumes. CO4: Understand the basics of various big data analytics techniques.
1030	MTCSCS 203B	Secure Software Design & Enterprise Computing	<ul style="list-style-type: none"> <li>• To fix software flaws and bugs in various software.</li> <li>• To make students aware of various issues like weak random number generation, information leakage, poor usability, and weak or no encryption on data traffic</li> <li>• Techniques for successfully implementing and supporting network services on an enterprise scale and heterogeneous systems environment.</li> <li>• To understand the methodologies and tools to design and develop secure software containing minimum vulnerabilities and flaws.</li> </ul>	CO1: Differentiate between various software vulnerabilities. CO2: Software process vulnerabilities for an organization. CO3: Monitor resources consumption in a software. CO4: Inter-relate security and software development process.
1031	MTCSCS 203C	Computer Vision	<ul style="list-style-type: none"> <li>• Be familiar with both the theoretical and practical aspects of computing with images.</li> <li>• Have described the foundation of image formation, measurement, and analysis.</li> <li>• Understand the geometric relationships between 2D images and the 3D world.</li> <li>• Grasp the principles of state-of-the-art deep neural networks.</li> </ul>	CO1: Review the fundamental concepts of a digital image processing system and Analyze images in the frequency domain using various transforms. CO2: Evaluate the techniques for Image enhancement used in digital image processing CO3: Developed the practical skills necessary to build computer vision applications. CO4: Have exposure to object and scene recognition and categorization from images.

## Course Outcomes

S. No.	Course Code	Course Title	Course Objective	Expected Outcome
1032	MTCSCS 204A	Advanced Communication Network	<ul style="list-style-type: none"> <li>• To have complete knowledge of networking concepts and functioning of all networking layers and have knowledge of various protocols associated with them.</li> </ul>	CO1: Understand advanced concepts in Communication Networking CO2: Design and develop protocols for Communication Networks. CO3: Understand the mechanisms in Quality of Service in networking. CO4: Optimize the Network Design.
1033	MTCSCS 204B	GPU Computing	<ul style="list-style-type: none"> <li>• To learn parallel programming with Graphics Processing Units (GPUs).</li> </ul>	CO1: Learn concepts in parallel programming CO2: Implementation of programs on GPUs, CO3: Debug of the programs CO4: Apply parallel programs.
1034	MTCSCS 204C	Digital Forensics	<ul style="list-style-type: none"> <li>• To provide an in-depth study of the rapidly changing and fascinating field of computer forensics.</li> <li>• To combines both the technical expertise and the knowledge required to investigate, detect and prevent digital crimes.</li> <li>• To have knowledge on digital forensics legislations, digital crime, forensics processes and procedures, data acquisition and validation, e-discovery tools</li> <li>• To have e-evidence collection and preservation, investigating operating systems and file systems, network forensics, art of steganography and mobile device forensics.</li> </ul>	CO1: Understand relevant legislation and codes of ethics CO2: Understand Computer forensics and digital detective and various processes, policies and procedures CO3: Apply process of E-discovery, guidelines and standards, E-evidence, tools and environment. CO4: Understand Email and web forensics and network forensics.

## Course Outcomes

S. No.	Course Code	Course Title	Course Objective	Expected Outcome
1035	MTCSCS 205	Audit Course - 2 AUDIT 1 and 2 : English for Research Paper Writing AUDIT 1 and 2: Disaster Management AUDIT 1 and 2 : Sanskrit For Technical Knowledge AUDIT 1 and 2 : Value Education AUDIT 1 and 2 : Constitution Of India AUDIT 1 and 2 : Pedagogy Studies AUDIT 1 and 2: Stress Management by Yoga AUDIT 1 and 2: Personality Development through Life Enlightenment Skills	<ul style="list-style-type: none"> <li>• To achieve overall health of body and mind</li> <li>• To overcome stress</li> </ul>	CO1: Knowledge of Eight parts of yog ( Ashtanga ). CO2: Understanding the Do's and Don't's in life. CO3: Knowledge and application of Ahinsa, satya, astheya, bramhacharya, aparigraha, Shaucha, santosh, tapa, swadhyay, ishwarpranidhan. CO4: Pracicing Asan and Pranayam.. CO5: Regularization of breathing techniques and its effects.
1036	MTCSCS 206	Information Security System Lab	<ul style="list-style-type: none"> <li>• To cover the concept of security , types of attack experienced, encryption and authentication for deal with attacks, what is data compression, need and techniques of data compression</li> </ul>	CO1: Apply knowledge of plaintext, cipher text, RSA and other cryptographic algorithm, Key Distribution to various Network Models CO2: Apply Communication Model in Computer Engineering Domain CO3: Understand Various models for data compression
1037	MTCSCS 207	Advanced Communication Network Lab	<ul style="list-style-type: none"> <li>• To have complete knowledge of networking concepts and functioning of all networking layers and have knowledge of various protocols associated with them.</li> </ul>	CO1: Understand advanced concepts in Communication Networking CO2: Design and develop protocols for Communication Networks. CO3: Understand the mechanisms in Quality of Service in networking. CO4: Optimize the Network Design.

## Course Outcomes

S. No.	Course Code	Course Title	Course Objective	Expected Outcome
1038	MTCSCS 208	Mini Project with Seminar	<ul style="list-style-type: none"> <li>• To identification of the problem</li> <li>• To use modern research tools/methods.</li> <li>• To design and conduct experiments and identify the solution of the problem/s.</li> </ul>	<p>CO1: Enable the Students to undertake short research project under the direction of guide</p> <p>CO2: impart skills in preparing detailed report describing the project and results.</p> <p>CO3: enable the students to undertake fabrication work of new experimental set up/devices</p> <p>CO4: Effectively communicate by making an oral presentation before an evaluation committee</p>
1039	MTCSCS 301A	Mobile Applications and Services	<ul style="list-style-type: none"> <li>• To presents the three main mobile platforms and their ecosystems, namely Android, iOS, and PhoneGap/WebOS.</li> <li>• To explore emerging technologies and tools used to design and implement feature-rich mobile applications for smartphones and tablets</li> <li>• To understand both the technical constraints relative to storage capacity, processing capacity, display screen, communication interfaces, and the user interface, context and profile</li> </ul>	<p>CO1: Identify the target platform and users and be able to define and sketch a mobile application</p> <p>CO2: Understand the fundamentals, frameworks of mobile Application Platforms</p> <p>CO3: Development lifecycle of mobile application platforms including iOS, Android, and Phone Gap</p> <p>CO4: Design and develop a mobile application prototype in one of the platform (challenge project)</p>
1040	MTCSCS 301B	Compiler for HPC	<ul style="list-style-type: none"> <li>• To introduce structure of compilers and high performance compiler design for students. Concepts of cache coherence and parallel loops in compilers are included.</li> </ul>	<p>CO1: Familiar with the structure of compiler.</p> <p>CO2: Understand Parallel loops</p> <p>CO3: Identify Data dependency</p> <p>CO4: Understand Exception handling and debugging in compiler.</p>
1041	MTCSCS 301C	Optimization Techniques	<ul style="list-style-type: none"> <li>• To provide insight to the mathematical formulation of real world problems.</li> <li>• To optimize these mathematical problems using nature based algorithms. And the solution is useful specially for NP-Hard problems.</li> </ul>	<p>CO1: Formulate optimization problems.</p> <p>CO2: Understand and apply the concept of optimality criteria for various types of optimization problems.</p> <p>CO3: Solve various constrained and unconstrained problems in Single variable as well as multivariable.</p> <p>CO4: Apply the methods of optimization in real life situation.</p>

## Course Outcomes

S. No.	Course Code	Course Title	Course Objective	Expected Outcome
1042	MTCSCS 302A	Business Analytics	<ul style="list-style-type: none"> <li>• To understand the role of business analytics within an organization.</li> <li>• To analyze data using statistical and data mining techniques and understand relationships</li> <li>• To understand the underlying business processes of an organization.</li> <li>• To gain an understanding of how managers use business analytics to formulate and solve business problems and to support managerial decision making.</li> <li>• To become familiar with processes needed to develop, report, and analyze business data.</li> <li>• To use decision-making tools/Operations research techniques.</li> <li>• To manage business process using analytical and management tools. Analyze and solve problems from different industries such as manufacturing, service, retail, software, banking and finance, sports, pharmaceutical, aerospace etc.</li> </ul>	<p>CO1: Understand the role of business analytics within an organization.</p> <p>CO2: Analyze data using statistical and data mining techniques and understand relationships between the underlying business processes of an organization.</p> <p>CO3: To become familiar with processes needed to develop, report, and analyze business data.</p> <p>CO4: Analyze and solve problems from different industries such as manufacturing, service, retail, software, banking and finance, sports, pharmaceutical, aerospace etc.</p> <p>CO5: Use decision-making tools/Operations research techniques.</p>
1043	MTCSCS 302B	Industrial Safety	<ul style="list-style-type: none"> <li>• To know about Industrial safety</li> <li>• To know about fundamental concepts of maintenance engineering.</li> <li>• To know about preventive measures to be taken.</li> </ul>	<p>CO1: Understand the role industrial safety.</p> <p>CO2: Understand fundamentals of maintenance engineering.</p> <p>CO3: Learn different methods of Wearing and Corrosion and their prevention.</p> <p>CO4: Trace out the faults occurring in various electrical systems.</p> <p>CO5: Know about Periodic and preventive maintenance of various systems.</p>

## Course Outcomes

S. No.	Course Code	Course Title	Course Objective	Expected Outcome
1044	MTCSCS 302C	Operations Research	<ul style="list-style-type: none"> <li>• To know about the optimization Techniques.</li> <li>• To know about Competitive Models.</li> <li>• To learn about Formulation of a LPP.</li> </ul>	CO1: Should able to carry out sensitivity analysis. CO2: Should able to model the real world problem and simulate it. CO3: Should able to apply the dynamic programming to solve problems of discreet and continuous variables. CO4: Should able to apply the concept of non-linear programming CO5: Should be able to formulate optimization techniques.
1045	MTCSCS 302D	Cost Management of Engineering Projects	<ul style="list-style-type: none"> <li>• To know about Cost concepts in decision-making</li> <li>• To know about Project making.</li> <li>• To know about Cost Behavior and Profit Planning</li> </ul> <p>Marginal Costing</p>	CO1: Should able to do cost management for various projects. CO2: Should able to understand the meaning of cost management. CO3: Should able to analyze Cost Behavior and Profit Planning. CO4: Understand Quantitative techniques for cost management CO5: Analyze the pricing and apply for various projects.
1046	MTCSCS 302E	Composite Materials	<ul style="list-style-type: none"> <li>• To know about introduction to composite materials.</li> <li>• To know about reinforcements.</li> <li>• To know about manufacturing process of composite materials.</li> </ul>	CO1: Understand Definition – Classification and characteristics of Composite materials. CO2: Know about Reinforcements. CO3: Know about manufacturing of Metal Matrix Composites. CO4: Know about manufacturing of Polymer Matrix Composites: CO5: Know about strength and laminates.
1047	MTCSCS 302F	Waste to Energy	<ul style="list-style-type: none"> <li>• To know about Energy waste introduction.</li> <li>• To know about Biomass process.</li> <li>• To know about various types of biomass plants and gasifiers.</li> </ul>	CO1: Know about various forms of Energy wastage. CO2: Know about Biomass introduction. CO3: Know about Biomass gasifiers. CO4: Know about Biogas properties. CO5: Know about Biomass combustion.

## Course Outcomes

S. No.	Course Code	Course Title	Course Objective	Expected Outcome
1048	MTCSCS 303	Dissertation-I /Industrial Project	To identification of the problem To use modern research tools/methods. To design and conduct experiments and identify the solution of the problem/s.	CO1: Handle research problems and use modern research tools/methods. CO2: Analyze and review the existing literature on a research problem. CO3: Design and conduct experiments. CO4: Write dissertation and technical reports. CO5: Publish research papers.
1049	MTCSCS 401	Dissertation II	To identification of the problem To use modern research tools/methods. To design and conduct experiments and identify the solution of the problem/s.	CO1: Handle research problems and use modern research tools/methods. CO2: Analyze and review the existing literature on a research problem. CO3: Design and conduct experiments. CO4: Write dissertation and technical reports. CO5: Publish research papers.
1050	MTCEEV101	Energy & Environment	<ul style="list-style-type: none"> <li>• To understand the Human Development with the Introduction to Energy Conservation.</li> <li>• To develop the understanding of the Energy Use of Environmental and Pollution Control Technologies in Energy Sector.</li> <li>• To study various sampling and classification problems, and the Designing Environmental Policies</li> </ul>	CO1: Have knowledge about the environment and various types of resources present in environment. CO2: Know the about the laws of energy and use the energy in various types. CO3: Know about the use various technique to use energy and control the pollution. CO4: Analyze and design various Programming Models for Environmental Policies. CO5: Have knowledge about Environmental Benefits and cost of the use energy.

## Course Outcomes

S. No.	Course Code	Course Title	Course Objective	Expected Outcome
1051	MTCEEV102	Advanced Waste Water Treatment Technology	<ul style="list-style-type: none"> <li>• To understand about the water quality and water treatment methods.</li> <li>• To develop the understanding of the water filtration method a various theory and equation.</li> <li>• To study various water sampling and Disinfection types.</li> </ul>	<p>CO1: Know ability to understand different phenomena involve in waste water recycling and reuse.</p> <p>CO2: Know about Standards and guidelines of waste Water and Waste Water Characteristics and their significance.</p> <p>CO3: Suggest the suitable technologies for the treatment of wastewater.</p> <p>CO4: Analyze and design the treatment systems and use filter operation for waste water treatment.</p> <p>CO5: Define the Principles of pollution prevention and mechanism of oxidation processes. Discuss about the wastewater characteristics.</p>
1052	MTCEEV103A	Advanced Water Treatment Technology	<ul style="list-style-type: none"> <li>• To have knowledge of waste water and Reuses of waste water.</li> <li>• To develop the understanding of the Wastewater Treatment Fundamentals and it's Physical-chemical and biological processes.</li> </ul>	<p>CO1: Know ability to understand different phenomena involve in water recycling and reuse.</p> <p>CO2: Know about Water Supplies Standards and guidelines of Water.</p> <p>CO3: Know various types of water treatment process and their use.</p> <p>CO4: Analyze and design the equation and use filter operation for water treatment.</p> <p>CO5: Know how to remove the hardness and make the water used.</p>
1053	MTCEEV103B	Statistical and Mathematical Techniques	<ul style="list-style-type: none"> <li>• To understand the the concept of solving ordinary and partial differential equations.</li> <li>• To know the Fundamentals of data analysis and Various sampling techniques.</li> <li>• To know the Concept of probability distributions.</li> </ul>	<p>CO1: Apply the basic knowledge of the probabilistic distribution function to the field of Engineering.</p> <p>CO2: Develop the regression equation for various phenomenon under consideration.</p> <p>CO3: Design and Testing of hypothesis.</p> <p>CO4: Distinguish different time series models.</p> <p>CO5: Students will be able to data analysis problems of environmental engineering.</p>

## Course Outcomes

S. No.	Course Code	Course Title	Course Objective	Expected Outcome
1054	MTCEEV103C	Environmental Geo technology	<ul style="list-style-type: none"> <li>• To understand the Principles of Geo-technology</li> <li>• To know the Soil-contaminant interaction and transport of contaminants in sub surface.</li> <li>• To study various sampling and classification problems.</li> </ul>	<p>CO1: Have comprehensive and historical overview of hazardous waste management, and prepare our students to be well-qualified and competitive in the responsibility of engineering design and permitting in the field of hazardous waste management.</p> <p>CO2: Provide comprehensive and historical overviews of hazardous wastes management from both scientific and engineering principles.</p> <p>CO3: Define and explain important concepts in the field of solid waste management and suggest suitable technical solutions for treatment of municipal and industrial waste.</p> <p>CO4: Find different various AMD (Acid Mine Drainage) and its effect.</p> <p>CO5: Know and work on principal Remote Sensing and its application of Environmental.</p>
1055	MTCEEV104A	Noise and Thermal Pollution	<ul style="list-style-type: none"> <li>• To understand the effects of noise on environment and properties.</li> <li>• To develop the understanding of the Noise Pollution Sources and Monitoring and collecting the sample methods.</li> <li>• To study of Thermal Pollution, noise pollution and Control of Noise Pollution</li> </ul>	<p>CO1: Define the various types of noise and its effect on environment &amp; human.</p> <p>CO2: Find out the sources of noise pollution.</p> <p>CO3: Analyze and learn to how control noise pollution and for that using equipments.</p> <p>CO4: Get knowledge about the limitation of source noise and their list of BIS code books on noise pollution.</p> <p>CO5: Know about the basic knowledge of thermal pollution and its effect on environment.</p>
1056	MTCEEV104B	Environmental Hydraulics	<ul style="list-style-type: none"> <li>• To have knowledge about the Surface hydrology and run off calculations.</li> <li>• To get awareness on Well hydraulics.</li> <li>• To understand about Ground water hydrology.</li> <li>• To learn basic management concepts.</li> </ul>	<p>CO1: Get knowledge about the fluid and its types.</p> <p>CO2: Get knowledge the various fluid properties and their working principal.</p> <p>CO3: Know about the various equation and flow measurement of pipes flow.</p> <p>CO4: Solve and find out the discharge in different orifice and notch and their coefficient.</p> <p>CO5: Get the different weir and notch with their types and water flow through the different channel.</p>

## Course Outcomes

S. No.	Course Code	Course Title	Course Objective	Expected Outcome
1057	MTCEEV104C	Environmental Chemistry & Microbiology	<ul style="list-style-type: none"> <li>• To know the principles and basic concepts of physical chemistry and Fundamentals of microbiology.</li> <li>• To understand the techniques for the analysis of air, water and soil environment.</li> <li>• To know the environmental applications of microbiology.</li> </ul>	<p>CO1: Understand chemistry involved in environment.</p> <p>CO2: Identify the chemical reactions and changes in contaminants.</p> <p>CO3: Understand the microbiology and its usefulness to environment.</p> <p>CO4: Perform experimental analysis of some properties of water and wastewater.</p> <p>CO5: Have a basic understanding on the basics of microbiology and their diversity and on the genetic material in the living cell.</p>
1058	MTCEEV105	Research Methodology and IPR	<ul style="list-style-type: none"> <li>• To understand research problem formulation.</li> <li>• To analyze research related information</li> <li>• To follow research ethics</li> <li>• To understand that today's world is controlled by Computer, Information Technology, but tomorrow world will be ruled by ideas, concept, and creativity.</li> </ul>	<p>CO1: Understand research problem formulation. Analyze research related information &amp; Follow research ethics.</p> <p>CO2: Understand that today's world is controlled by Computer, Information Technology, but tomorrow world will be ruled by ideas, concept, and creativity.</p> <p>CO3: Understanding that when IPR would take such important place in growth of individuals &amp; nation, it is needless to emphasize the need of information about Intellectual Property Right to be promoted among students in general &amp; engineering in particular.</p> <p>CO4: Understand that IPR protection provides an incentive to inventors for further research work and investment in R &amp; D, which leads to creation of new and better products, and in turn brings about, economic growth and social benefits.</p>

## Course Outcomes

S. No.	Course Code	Course Title	Course Objective	Expected Outcome
1059	MTCEEV106	Audit Course - 1 AUDIT 1 and 2 : English for Research Paper Writing AUDIT 1 and 2: Disaster Management AUDIT 1 and 2 : Sanskrit For Technical Knowledge AUDIT 1 and 2 : Value Education AUDIT 1 and 2 : Constitution Of India AUDIT 1 and 2 : Pedagogy Studies AUDIT 1 and 2: Stress Management by Yoga AUDIT 1 and 2: Personality Development through Life Enlightenment Skills	<ul style="list-style-type: none"> <li>• To learn to achieve the highest goal happily</li> <li>• To become a person with stable mind, pleasing personality and determination</li> <li>• To awaken wisdom in students</li> </ul>	CO1: Knowledge of Neetisatakam - Holistic development of personality. CO2: Approach to day to day work and duties. CO3: Understanding the Theory of Statements of basic knowledge. CO4: Understanding the Personality of Role model. Shrimad Bhagwad Geeta. CO5: Study of Personality Development through Life Enlightenment Skills.
1060	MTCEEV107	Advanced Water Treatment Lab	<ul style="list-style-type: none"> <li>• To understand the water quality and its various parameters</li> <li>• To find out the in water present various types of solid and water present in water</li> </ul>	CO1: Get knowledge about the water quality. CO2: Analyze and evaluate the taking experiment. CO3: Find out the various solids parts present in water sample. CO4: Apply the various research methods followed in engineering research for formulation and Design of own research problems and to utilize them in their research project. CO5: Get knowledge about various water supply Fittings.

## Course Outcomes

S. No.	Course Code	Course Title	Course Objective	Expected Outcome
1061	MTCEEV108	Sanitation Engineering lab	<ul style="list-style-type: none"> <li>• To understand the sewage and present various solids and find out various methods.</li> </ul>	<p>CO1: Understand the research methodology concepts, research problems and the quantity of various matters present in sewage.</p> <p>CO2: Analyze and evaluate the vale and amount present in sewage sample.</p> <p>CO3: Prepare a thesis or a technical paper, and present or publish them on the basis of the fin in lab water sample data.</p> <p>CO4: Apply the various research methods followed in engineering research for formulation and Design of own research problems and to utilize them in their research project.</p> <p>CO5: Get knowledge about the various types of sanitary fitting.</p>
1062	MTCEEV201	Environmental Policies & Legislation	<ul style="list-style-type: none"> <li>• To understand about the Role of national, international agencies for environmental aspects.</li> <li>• To know about the various act and legislations in developing and developed countries. And their related issue.</li> </ul>	<p>CO1: Get knowledge Assess the value of environmental management and auditing in enterprises, and the Importance of environmental legislation.</p> <p>CO2: Examine how environmental legislation, management and auditing are integrated into the Private and public sectors.</p> <p>CO3: Analyze the principles and elements of environmental management and auditing systems that Achieve sustainable development</p> <p>CO4: Understand the significance of environmental legislation in relation to the planning and Implementation.</p> <p>CO5: Prepare a thesis or a technical paper, and present or publish them on the basis of the fin in lab water sample data.</p>

## Course Outcomes

S. No.	Course Code	Course Title	Course Objective	Expected Outcome
1063	MTCEEV202	Environment Impact Assessment & Auditing	<ul style="list-style-type: none"> <li>• To instruct the students on the basic concepts of EIA and The EIA methodologies.</li> <li>• To understand the Environmental legislations in India and the Environmental Clearance procedure in India.</li> <li>• To understand the Environmental audit and management techniques and its Fundamental Concepts of Sustainable development</li> </ul>	<p>CO1: Understand the necessity to study the impacts and risks that will be caused by projects or industries and the methods to overcome these impacts.</p> <p>CO2: Know about the legal requirements of Environmental and Risk Assessment for projects.</p> <p>CO3: Have knowledge and understanding of the role of EIA in environmental Management for sustainable develops.</p> <p>CO4: Gain awareness regarding ecologically sustainable development and Environmental friendly technologies and also the regulatory provisions for environmental Protect.</p> <p>CO5: Familiar with the undertaking of EIA studies and able to quantify EIA and Make EIA report.</p>
1064	MTCEEV203A	Solid Waste Management	<ul style="list-style-type: none"> <li>• To understand about the Different elements of land pollution</li> <li>• To instruct the students on various hazardous wastes, their origin, characteristics and treatment.</li> </ul>	<p>CO1: Understand the characteristics of different types of solid and hazardous wastes and the factors affecting variation</p> <p>CO2: Define and explain important concepts in the field of solid waste management and suggest suitable technical solutions for treatment of municipal and industrial waste</p> <p>CO3: Able to suggest more efficient recycling methods and to reduce the harmful climatic impacts of waste management.</p> <p>CO4: Have skill to assess and develop physical/chemical/biological treatment techniques for the control of hazardous wastes.</p> <p>CO5: Identify and interpret the criteria for the classification of a substance as solid/hazardous wastes.</p>
1065	MTCEEV203B	Hydrology and Applied Hydraulics	<ul style="list-style-type: none"> <li>• To get awareness on Surface hydrology and run off calculations.</li> <li>• To understand the Well hydraulics and Ground water hydrology.</li> <li>• To understand about Basin management concepts.</li> </ul>	<p>CO1: Understand about Hydrology and the Evaporation of water on surface</p> <p>CO2: Get knowledge about the water storage equipment and measurement equipment with analysis.</p> <p>CO3: Get knowledge that how to recharge the ground water and reuse the water.</p> <p>CO4: Know about the method of pumping of water from ground and protect from pollution.</p> <p>CO5: Design the drainage system.</p>

## Course Outcomes

S. No.	Course Code	Course Title	Course Objective	Expected Outcome
1066	MTCEEV203C	Indoor Air Quality	<ul style="list-style-type: none"> <li>• To understand the level of pollutants in indoor and outdoor air and its policy and issue.</li> <li>• To work on control the pollution and Measurement methods.</li> </ul>	<p>CO1: Achieve fundamental aspects to design Indore air pollution control methodologies</p> <p>CO2: Get knowledge Indore Air monitoring strategies.</p> <p>CO3: Apply sampling techniques and Suggest suitable Indore air pollution prevention equipments and techniques for various gaseous and particulate pollutants.</p> <p>CO4: Know about the various policies of public health- IAQ and their policy issues.</p> <p>CO5: Get the knowledge about how to prevent the environment and combust the toxics gases.</p>
1067	MTCEEV204A	Industrial Waste Treatment	<ul style="list-style-type: none"> <li>• To educate the students on different elements of water pollution and methods of treatment</li> <li>• To get knowledge of various industrial processes and the origin, characteristics and treatment of waste water generate.</li> </ul>	<p>CO1: Understand and apply basic concepts of industrial wastewater treatment.</p> <p>CO2: Apply principle of waste minimization for reuse recycling and recovery.</p> <p>CO3: Synthesize treatment system, component or processes for industrial wastewater treatment.</p> <p>CO4: Formulate and design treatment units using hydraulic principles and calculation techniques for industrial wastewater treatment process.</p> <p>CO5: Development of treatment flow sheet based on wastewater characteristics for various industries. Analyze and evaluates treatment alternative flow sheets through case studies.</p>

## Course Outcomes

S. No.	Course Code	Course Title	Course Objective	Expected Outcome
1068	MTCEEV204B	Hazardous Waste Treatment	<ul style="list-style-type: none"> <li>• To instruct the students on Different elements of land pollution</li> <li>• To give the knowledge about the Various hazardous wastes, their origin, characteristics and treatment</li> <li>• To study various EPA obligations and Responsibilities, Hazardous Waste.</li> </ul>	<p>CO1: Provide information regarding different elements of land pollution, various hazardous wastes, their origin, characteristics and treatment.</p> <p>CO2: Maintain a comprehensive integrated solid waste management approaches that addresses collection, transportation and disposal.</p> <p>CO3: Enable them to protect the environment by fulfilling the laws, regulations, ordinances and other requirements as set forth by the country.</p> <p>CO4: Provide safe recycling and disposal options for special wastes that may pose harm to the Environment and /or to public health and safety</p> <p>CO5: Make them aware of advanced principles related to the separation, processing and transform Technologies of Solid Wastes.</p>
1069	MTCEEV204C	Ground Water Pollution	<ul style="list-style-type: none"> <li>• To understand the water quality its principal and Sources Of Pollution.</li> <li>• To develop the understanding of the Principles of Pollutant movement with the Factors affecting Pathogen movement &amp; Survival.</li> <li>• To study various Ground Water Quality Monitoring Ground and principal.</li> </ul>	<p>CO1: Get fundamental Concepts of Groundwater Flow, Transport and Contamination.</p> <p>CO2: Demonstrate conceptual understanding of the contamination of the soil and groundwater Media.</p> <p>CO3: Explain the governing processes and identify factors controlling transport and fate of Contaminants in soil and groundwater.</p> <p>CO4: Get the knowledge about the dissolved solid present in the water and various law of water flow.</p> <p>CO5: Get the knowledge the about principles and Monitoring of Ground Water Quality.</p>

## Course Outcomes

S. No.	Course Code	Course Title	Course Objective	Expected Outcome
1070	MTCEEV205	Audit Course - 2 AUDIT 1 and 2 : English for Research Paper Writing AUDIT 1 and 2: Disaster Management AUDIT 1 and 2 : Sanskrit For Technical Knowledge AUDIT 1 and 2 : Value Education AUDIT 1 and 2 : Constitution Of India AUDIT 1 and 2 : Pedagogy Studies AUDIT 1 and 2: Stress Management by Yoga AUDIT 1 and 2: Personality Development through Life Enlightenment Skills	<ul style="list-style-type: none"> <li>• To achieve overall health of body and mind</li> <li>• To overcome stress</li> </ul>	CO1: Knowledge of Eight parts of yog ( Ashtanga ). CO2: Understanding the Do's and Don't's in life. CO3: Knowledge and application of Ahinsa, satya, astheya, bramhacharya, aparigraha, Shaucha, santosh, tapa, swadhyay, ishwarpranidhan. CO4: Practicing Asan and Pranayam.. CO5: Regularization of breathing techniques and its effects.
1071	MTCEEV206	Industrial Waste Treatment Lab	<ul style="list-style-type: none"> <li>• To understand the get knowledge about the industrial waste and present in industry.</li> <li>• To study various sampling and classification problems.</li> </ul>	CO1: Get Knowledge about the Water Present WASTE. CO2: Analyze and evaluate research works and to formulate a research problem to pursue research CO3: Prepare the different types of lab experiment related the waste treatment. CO4: Apply the various research methods and followed in engineering research for formulation and Design of own research problems and to utilize them in their research project. CO5: Know the various practical and Design problems.
1072	MTCEEV207	Air Quality Testing Lab	<ul style="list-style-type: none"> <li>• To understand the monitoring the various source like (gases, air and materials).</li> <li>• To understand Bioaerosol sampling</li> <li>• To study various meteorological parameters.</li> </ul>	CO1: Monitor respirable particulate materials. CO2: Understand the gases and particulates in ambient air. CO3: Get the knowledge about the indoor air quality and related their practical. CO4: Get knowledge of meteorological measurement parameter. CO5: Know the various practical and the specification of the materials.

## Course Outcomes

S. No.	Course Code	Course Title	Course Objective	Expected Outcome
1073	MTCEEV208	Mini Project with Seminar	<ul style="list-style-type: none"> <li>• To identification of the problem</li> <li>• To use modern research tools/methods.</li> <li>• To design and conduct experiments and identify the solution of the problem/s.</li> </ul>	<p>CO1: Enable the Students to undertake short research project under the direction of guide</p> <p>CO2: To impart skills in preparing detailed report describing the project and results.</p> <p>CO3: To enable the students to undertake fabrication work of new experimental set up/devices</p> <p>CO4: To effectively communicate by making an oral presentation before an evaluation committee</p>
1074	MTCEEV301A	Air Pollution & Its Control	<ul style="list-style-type: none"> <li>• To have understanding on fundamentals of air pollution control.</li> <li>• To develop the understanding of the Design and operation of various air pollution control devices.</li> <li>• To study various sampling and classification problems.</li> </ul>	<p>CO1: Gain ability to interpret meteorological data and develop capability to assessment of project proposal, air quality pollution index for any region.</p> <p>CO2: Apply modeling techniques. Ability to justify the use of pollution control equipment and their design.</p> <p>CO3: Suggest suitable air pollution prevention equipments and techniques for various gaseous and particulate pollutants to Industries. Discuss the emission standards.</p> <p>CO4: Ability to identify air pollution problems and interpret criteria air quality data.</p> <p>CO5: Ability to interpret meteorological data and develop capability to assessment of project proposal, air quality pollution index for any region.</p>

## Course Outcomes

S. No.	Course Code	Course Title	Course Objective	Expected Outcome
1075	MTCEEV301B	Environmental Aspects of Industries	<ul style="list-style-type: none"> <li>• To understand about the Environmental laws related to Various Industries and the Environmental management for captive power plants.</li> <li>Environmental problems in cement industries.</li> <li>• To develop the understanding of the Environmental Aspects and Metallurgical Industries.</li> <li>• To study various R&amp;R, industrial disasters, industrial safety Environmental laws.</li> </ul>	<p>CO1: Understand the role of occupational health and safety in the workplace in the prevention of incidents, Injury and illness. Understand the modus operandi of onsite and offsite emergency control plans in industry.</p> <p>CO2: Have a basic understanding of fire hazards in industry, its causes, types, detection and extinguishing Procedures.</p> <p>CO3: Get the knowledge about the different types of effective personal protective gears used in industry for Specific operations, their maintenance and disposal methods.</p> <p>CO4: Get the knowledge about Hazard assessment studies and ways to handle hazard situations in industry acting as Environment and Safety officers.</p> <p>CO5: Develop an understanding about the role of plant layout, housekeeping and machine guards to assure health and safety in workplaces.</p>
1076	MTCEEV301C	Environment & Health	<ul style="list-style-type: none"> <li>• To get the knowledge of students about the importance of work place safety and various measures to prevent occupational health hazards.</li> <li>• To develop the understanding of the Industrial and agricultural pollutants.</li> <li>• To study Disease control, disease prevention, Nuclear energy and environmental health.</li> </ul>	<p>CO1: Increase the awareness of environmental issues and how they affect society.</p> <p>CO2: Develop skills and insight into critical thinking and situational awareness of surrounding environment.</p> <p>CO3: Develop the quantitative skills needed to function as a professional in occupational and Environmental hygienist.</p> <p>CO4: Understand basic biological concepts needed to evaluate exposure-response relationships.</p> <p>CO5: Get knowledge about the human health and their relative laws, education and human welfare.</p>

## Course Outcomes

S. No.	Course Code	Course Title	Course Objective	Expected Outcome
1077	MTCEEV302A	Business Analytics	<ul style="list-style-type: none"> <li>• To understand the role of business analytics within an organization.</li> <li>• To analyze data using statistical and data mining techniques and understand relationships</li> <li>• To understand the underlying business processes of an organization.</li> <li>• To gain an understanding of how managers use business analytics to formulate and solve business problems and to support managerial decision making.</li> <li>• To become familiar with processes needed to develop, report, and analyze business data.</li> <li>• To use decision-making tools/Operations research techniques.</li> <li>• To manage business process using analytical and management tools. Analyze and solve problems from different industries such as manufacturing, service, retail, software, banking and finance, sports, pharmaceutical, aerospace etc.</li> </ul>	<p>CO1: Understand the role of business analytics within an organization.</p> <p>CO2: Analyze data using statistical and data mining techniques and understand relationships between the underlying business processes of an organization.</p> <p>CO3: To become familiar with processes needed to develop, report, and analyze business data.</p> <p>CO4: Analyze and solve problems from different industries such as manufacturing, service, retail, software, banking and finance, sports, pharmaceutical, aerospace etc.</p> <p>CO5: Use decision-making tools/Operations research techniques.</p>
1078	MTCEEV302B	Industrial Safety	<ul style="list-style-type: none"> <li>• To know about Industrial safety</li> <li>• To know about fundamental concepts of maintenance engineering.</li> <li>• To know about preventive measures to be taken.</li> </ul>	<p>CO1: Understand the role industrial safety.</p> <p>CO2: Understand fundamentals of maintenance engineering.</p> <p>CO3: Learn different methods of Wearing and Corrosion and their prevention.</p> <p>CO4: Trace out the faults occurring in various electrical systems.</p> <p>CO5: Know about Periodic and preventive maintenance of various systems.</p>

## Course Outcomes

S. No.	Course Code	Course Title	Course Objective	Expected Outcome
1079	MTCEEV302C	Operations Research	<ul style="list-style-type: none"> <li>• To know about the optimization Techniques.</li> <li>• To know about Competitive Models.</li> <li>• To learn about Formulation of a LPP.</li> </ul>	CO1: Should able to carry out sensitivity analysis. CO2: Should able to model the real world problem and simulate it. CO3: Should able to apply the dynamic programming to solve problems of discreet and continuous variables. CO4: Should able to apply the concept of non-linear programming CO5: Should be able to formulate optimization techniques.
1080	MTCEEV302D	Cost Management of Engineering Projects	<ul style="list-style-type: none"> <li>• To know about Cost concepts in decision-making</li> <li>• To know about Project making.</li> <li>• To know about Cost Behavior and Profit Planning</li> </ul> <p>Marginal Costing</p>	CO1: Should able to do cost management for various projects. CO2: Should able to understand the meaning of cost management. CO3: Should able to analyze Cost Behavior and Profit Planning. CO4: Understand Quantitative techniques for cost management CO5: Analyze the pricing and apply for various projects.
1081	MTCEEV302E	Composite Materials	<ul style="list-style-type: none"> <li>• To know about introduction to composite materials.</li> <li>• To know about reinforcements.</li> <li>• To know about manufacturing process of composite materials.</li> </ul>	CO1: Understand Definition – Classification and characteristics of Composite materials. CO2: Know about Reinforcements. CO3: Know about manufacturing of Metal Matrix Composites. CO4: Know about manufacturing of Polymer Matrix Composites: CO5: Know about strength and laminates.
1082	MTCEEV302F	Waste to Energy	<ul style="list-style-type: none"> <li>• To know about Energy waste introduction.</li> <li>• To know about Biomass process.</li> <li>• To know about various types of biomass plants and gasifiers.</li> </ul>	CO1: Know about various forms of Energy wastage. CO2: Know about Biomass introduction. CO3: Know about Biomass gasifiers. CO4: Know about Biogas properties. CO5: Know about Biomass combustion.

## Course Outcomes

S. No.	Course Code	Course Title	Course Objective	Expected Outcome
1083	MTCEEV303	Dissertation-I /Industrial Project	To identification of the problem To use modern research tools/methods. To design and conduct experiments and identify the solution of the problem/s.	CO1: Handle research problems and use modern research tools/methods. CO2: Analyze and review the existing literature on a research problem. CO3: Design and conduct experiments. CO4: Write dissertation and technical reports. CO5: Publish research papers.
1084	MTCEEV401	Dissertation-II	To identification of the problem To use modern research tools/methods. To design and conduct experiments and identify the solution of the problem/s.	CO1: Handle research problems and use modern research tools/methods. CO2: Analyze and review the existing literature on a research problem. CO3: Design and conduct experiments. CO4: Write dissertation and technical reports. CO5: Publish research papers.
1085	MTCETE101	Traffic Engineering-I	<ul style="list-style-type: none"> <li>• To Study Traffic Engineering and its elements.</li> <li>• To understand the Sampling in Traffic Studies.</li> <li>• To Traffic Regulations and Control.</li> </ul>	CO1: Understand the scope of Traffic Engineering. CO2: Study and Analysis of Traffic Engineering. CO3: Understand the Traffic Signs, Markings and Signals. CO4: Analyze and study the Traffic Engineering Facilities like Channelising Islands, Mini-roundabout, etc., CO5: Evaluation of Regulations on Speed and Traffic management.
1086	MTCETE102	Highway Materials	<ul style="list-style-type: none"> <li>• To study about aggregates, soil and bitumen.</li> <li>• To understand the bitumen mixes.</li> </ul> <p>To get to know about the Cement Concrete Constituents and their requirements</p>	CO1: Understand aggregates and its Classification. CO2: The students will be able to understand the Classification, Structural and Constructional problems in soil. CO3: Understanding Bitumen, its sources, manufacturing and its Classification. CO4: Student will be able to get knowledge about bituminous mixes. CO5: Student will know Cement Concrete, Constituents and their requirements.

## Course Outcomes

S. No.	Course Code	Course Title	Course Objective	Expected Outcome
1087	MTCETE103A	Pavement Analysis and Design	<ul style="list-style-type: none"> <li>• To learn the concept of pavement and their types.</li> <li>• To design the pavement layers and study further the sub-grade.</li> <li>• To analyse the detailing of the Pavement evaluation, rehabilitation and Road Construction.</li> </ul>	CO1: Know the Types and Component parts of Pavements and Subgrade. CO2: Analyze of Stresses in Flexible Pavements and its design. CO3: Analyze of Stresses in Rigid pavements and its design. CO4: Understand Pavement evaluation and rehabilitation. CO5: Know various road construction procedures and specifications.
1088	MTCETE103B	Statistical and Mathematical Techniques	<ul style="list-style-type: none"> <li>• To solve the Linear Programming problem and their solutions.</li> <li>• To understand the Dual Simplex method, Formulation of a transportation problem.</li> <li>• To solve problems related to Probability Distribution, Regression and Correlation.</li> <li>• To come up with analysis of sampling, standard error, sampling distribution etc.</li> </ul>	CO1: Analyze the Formulation of the Linear Programming problem. CO2: Understand the Formulation of a transportation problem. CO3: Understand the Probability Distribution. CO4: Apply the numerical techniques and tools for the Regression and Correlation. CO5: Know various types of sampling, hypothesis and parameters of the population.
1089	MTCETE103C	Transportation Planning	<ul style="list-style-type: none"> <li>• To introduce to the field of transportation planning, Transportation data and survey methods, Transportation Modes and Technologies.</li> <li>• To explains the Four-stage Sequential Planning and Land use–Transportation Planning.</li> </ul>	CO1: Understand the Transportation planning, problems and problem solving process. CO2: Know the Type of Transportation data and its sources and survey methods. CO3: Know the Transportation Modes and Technologies. CO4: Analyze of the Four-stage Sequential Planning. CO5: Understand the Urban Forms of Transportation Planning and Modern era models.

## Course Outcomes

S. No.	Course Code	Course Title	Course Objective	Expected Outcome
1090	MTCETE104A	Ground Improvement Techniques	<ul style="list-style-type: none"> <li>• To do densification methods in granular soils and cohesive soils.</li> <li>• To understand the mechanical, lime, cement and bitumen stabilization.</li> <li>• To understand reinforced earth and geo-textiles.</li> </ul>	<p>CO1: Providing knowledge about ground improvement and ground modification techniques.</p> <p>CO2: Determining the In-situ densification methods in granular soils &amp; Cohesive soils.</p> <p>CO3: Analyzing the Mechanical Stabilization of Cement, Lime and Bitumen.</p> <p>CO4: Determining the components and principles of reinforced earth.</p> <p>CO5: Providing knowledge about geotextiles, geogrids and its functions.</p>
1091	MTCETE104B	Intelligent Transportation system	<ul style="list-style-type: none"> <li>• To know travel management and ITS designs.</li> <li>• To understand the Evolution of AHS and Current Vehicle Trends.</li> <li>• To familiarize students with Spacing and Capacity for Different AHS Concepts.</li> <li>• To understand ITS Travel Management.</li> </ul>	<p>CO1: Understand Travel Management.</p> <p>CO2: Apply Modeling and Simulation Techniques.</p> <p>CO3: Know Automated Highway Systems.</p> <p>CO4: Understand Provision of Spacing and Capacity for Different AHS Concepts.</p> <p>CO5: Assess ITS Travel Management, Vehicle Positioning System, Electronic Toll Collection and Electronic Car Parking.</p>
1092	MTCETE104C	Pavement Maintenance System	<ul style="list-style-type: none"> <li>• To perform Pavement Evaluation and Performance.</li> <li>• To understand the pavement deformation and behaviour in flexible and rigid pavement.</li> <li>• To Analyze the Pavement Evaluation &amp; Measuring Equipments.</li> </ul>	<p>CO1: Analyze the Pavement Evaluation and Performance.</p> <p>CO2: Assess the pavement deformation and behaviour in flexible and rigid pavement.</p> <p>CO3: Analyze the Pavement Evaluation &amp; Measuring Equipments.</p> <p>CO4: Understand Pavement Overlays and their designs.</p> <p>CO5: Understand Analyze, Evaluation and Selection of Pavement Maintenance System.</p>

## Course Outcomes

S. No.	Course Code	Course Title	Course Objective	Expected Outcome
1093	MTCETE105	Research Methodology and IPR	<ul style="list-style-type: none"> <li>• To understand research problem formulation.</li> <li>• To analyze research related information</li> <li>• To follow research ethics</li> <li>• To understand that today's world is controlled by Computer, Information Technology, but tomorrow world will be ruled by ideas, concept, and creativity.</li> </ul>	<p>CO1: Understand research problem formulation. Analyze research related information &amp; Follow research ethics.</p> <p>CO2: Understand that today's world is controlled by Computer, Information Technology, but tomorrow world will be ruled by ideas, concept, and creativity.</p> <p>CO3: Understanding that when IPR would take such important place in growth of individuals &amp; nation, it is needless to emphasize the need of information about Intellectual Property Right to be promoted among students in general &amp; engineering in particular.</p> <p>CO4: Understand that IPR protection provides an incentive to inventors for further research work and investment in R &amp; D, which leads to creation of new and better products, and in turn brings about, economic growth and social benefits.</p>
1094	MTCETE106	Audit Course - 1 AUDIT 1 and 2 : English for Research Paper Writing AUDIT 1 and 2: Disaster Management AUDIT 1 and 2 : Sanskrit For Technical Knowledge AUDIT 1 and 2 : Value Education AUDIT 1 and 2 : Constitution Of India AUDIT 1 and 2 : Pedagogy Studies AUDIT 1 and 2: Stress Management by Yoga AUDIT 1 and 2: Personality Development through Life Enlightenment Skills	<ul style="list-style-type: none"> <li>• To learn to achieve the highest goal happily</li> <li>• To become a person with stable mind, pleasing personality and determination</li> <li>• To awaken wisdom in students</li> </ul>	<p>CO1: Knowledge of Neetisatakam - Holistic development of personality.</p> <p>CO2: Approach to day to day work and duties.</p> <p>CO3: Understanding the Theory of Statements of basic knowledge.</p> <p>CO4: Understanding the Personality of Role model. Shrimad Bhagwad Geeta.</p> <p>CO5: Study of Personality Development through Life Enlightenment Skills.</p>

## Course Outcomes

S. No.	Course Code	Course Title	Course Objective	Expected Outcome
1095	MTCETE107	Ground Improvement Techniques Lab	<ul style="list-style-type: none"> <li>• To analyse shear strength parameters and shear.</li> <li>• To understand the settlement of soil and different tests.</li> <li>• To determine the Lime Content and Short-Term Compression Behavior of soil.</li> </ul>	CO1: Study the shear strength parameters and shear. CO2: Determine the settlement of soil and different tests performed on it. CO3: Determine the Lime Content and Short-Term Compression Behavior of soil. CO4: Determine the liquid limit, plastic limit and plasticity index of a given soil sample. CO5: Know visual classification of soil.
1096	MTCETE108	Pavement analysis and Design Lab	<ul style="list-style-type: none"> <li>• To understand the pavement deformation and behavior in flexible and rigid pavement.</li> <li>• To perform the Pavement Evaluation &amp; Measuring Equipments.</li> <li>• To know the Analysis, Evaluation and Selection of Framework for pavement.</li> </ul>	CO1: Analyze the Pavement Evaluation and Performance. CO2: Assess the pavement deformation and behavior in flexible and rigid pavement. CO3: Analyze the Pavement Evaluation & Measuring Equipments. CO4: Understand Pavement Overlays and their designs. CO5: Analyze, Evaluation and Selection of Framework for pavement.
1097	MTCETE201	Traffic Engineering-II	<ul style="list-style-type: none"> <li>• To analyse the Highway Capacity and Accident Analysis</li> <li>• To understand the Flow Theory and Probabilistic Aspects of Traffic Flow</li> <li>• To know about the Fundamental principle, application of simulation techniques in traffic engineering.</li> </ul>	CO1: Understand Traffic Forecast. CO2: Determine Highway Capacity and Accident Analysis. CO3: Identify Traffic Flow Theory and Probabilistic Aspects of Traffic Flow. CO4: Know about the Fundamental principle, application of simulation techniques in traffic engineering. CO5: Identify and determine the Design Hourly Volume for Varying Demand Conditions.
1098	MTCETE202	Urban Transportation Planning-I	<ul style="list-style-type: none"> <li>• To understand the Urban Transportation Problems and Planning.</li> <li>• To get the Knowledge of Data Collections and inventories.</li> <li>• To understand the UTPS Approach and Trip Generation.</li> </ul>	CO1: Understand the Urban Transportation Problems and Planning. CO2: Know Data Collections and inventories. CO3: Understand the UTPS Approach and Trip Generation. CO4: Understand the Land use and its interaction. CO5: Know various Transit Networks and System Analysis.

## Course Outcomes

S. No.	Course Code	Course Title	Course Objective	Expected Outcome
1099	MTCETE203A	Highway Geometric Design	<ul style="list-style-type: none"> <li>• To understand the Design Elements like traffic composition, traffic forecasting, design vehicle, etc,</li> <li>• To understand the Design Elements like super elevation, widening, transition curves and Cross Section Elements like shoulders, kerbs, camber, etc.,</li> <li>• To Design the Intersections and Parking lots.</li> </ul>	CO1: Understand the Design Elements like traffic composition, traffic forecasting, design vehicle, etc. CO2: Know the Design Elements like super elevation, widening, transition curves, etc., CO3: Know the Cross Section Elements like shoulders, kerbs, camber, etc., CO4: Design of Intersections. CO5: Design of Parking lots.
1100	MTCETE203B	Highway Construction	<ul style="list-style-type: none"> <li>• To understand the Equipment in Highway Construction and Sub grade.</li> <li>• To understand the Flexible Pavements Layers and Cement Concrete Pavement Layers.</li> <li>• To understand the Maintenance and Hill Roads.</li> </ul>	CO1: Know the Equipments used in Highway Construction and Sub grades. CO2: Explain Flexible Pavements Layers. CO3: Understand the Cement Concrete Pavement Layers. CO4: Know the Soil Stabilized Pavement Layers and drainage. CO5: Explain Maintenance and Hill Roads.
1101	MTCETE203C	GIS Application in Transportation Engineering	<ul style="list-style-type: none"> <li>• To obtain the Applications of GIS in Environment monitoring.</li> <li>• To understand the Geographic Data Representation, Storage, Quality and Standards.</li> <li>To get the knowledge of Components of GIS and coordinate systems.</li> </ul>	CO1: Know Components of GIS and coordinate systems . CO2: Understand the Geographic Data Representation, Storage, Quality and Standards. CO3: Understand the GIS Data Processing, Analysis and Modeling. CO4: Know the Applications of GIS in Environment monitoring CO5: Know the Structure of GIS.
1102	MTCETE204A	Bridge Engineering	<ul style="list-style-type: none"> <li>• To know the Standard specifications for bridges and IRC loadings.</li> <li>• To get the knowledge of the History of Bridge Development.</li> <li>• To obtain the knowledge of the Bridge Construction.</li> </ul>	CO1: Get the knowledge of the History of Bridge Development. CO2: Understand the Bridge Super structure. CO3: Draw the key points in the Bridge Foundation. CO4: Obtain the knowledge of the Bridge Construction. CO5: Know the Standard specifications for bridges and IRC loadings.

## Course Outcomes

S. No.	Course Code	Course Title	Course Objective	Expected Outcome
1103	MTCETE204B	Transportation Facility Design	<ul style="list-style-type: none"> <li>• To Design the Intersections &amp; geometric standards.</li> <li>• To identify the Energy Issues in Transportation and Transportation alternatives.</li> <li>• To understand the Terminal Planning &amp; Design Terminal Planning &amp; Design.</li> </ul>	CO1: Know and understanding of the Design of highways. CO2: Understand the Terminal Planning & Design of Terminal Planning & Design. CO3: Evaluate and design of existing geometrics of Highway. CO4: Design of Intersections & geometric standards. CO5: Identify the Energy Issues in Transportation and Transportation alternatives.
1104	MTCETE204C	Quantitative Techniques for Transportation Engineering	<ul style="list-style-type: none"> <li>• To understand the Sampling And Survey Methods.</li> <li>• To Getting knowledge of Probability Distributions and Application in Traffic Engineering.</li> <li>• To come up with different Advanced Techniques like Network Flow Problems.</li> </ul>	CO1: Understand the Sampling And Survey Methods. CO2: Get knowledge of Probability Distributions and Application in Traffic Engineering. CO3: Know the Hypotheses testing and different Types of error. CO4: Solve Simple and Multiple Linear Regression. CO5: Asses different Advanced Techniques like Network Flow Problems.
1105	MTCETE205	Audit Course - 2 AUDIT 1 and 2 : English for Research Paper Writing AUDIT 1 and 2: Disaster Management AUDIT 1 and 2 : Sanskrit For Technical Knowledge AUDIT 1 and 2 : Value Education AUDIT 1 and 2 : Constitution Of India AUDIT 1 and 2 : Pedagogy Studies AUDIT 1 and 2: Stress Management by Yoga AUDIT 1 and 2: Personality Development through Life Enlightenment Skills	<ul style="list-style-type: none"> <li>• To achieve overall health of body and mind</li> <li>• To overcome stress</li> </ul>	CO1: Knowledge of Eight parts of yog ( Ashtanga ). CO2: Understanding the Do's and Don't's in life. CO3: Knowledge and application of Ahinsa, satya, astheya, bramhacharya, aparigraha, Shaucha, santosh, tapa, swadhyay, ishwarpranidhan. CO4: Pracicing Asan and Pranayam.. CO5: Regularization of breathing techniques and its effects.

## Course Outcomes

S. No.	Course Code	Course Title	Course Objective	Expected Outcome
1106	MTCETE206	Highway Material Testing Lab	<ul style="list-style-type: none"> <li>• To test different highway materials like aggregates, bitumen, etc.</li> <li>• To understand the necessary tests required for the sampling of the materials used in road construction.</li> </ul>	CO1: Study different aggregate tests. CO2: Determine elongation index, flakiness index and fineness modulus of aggregates. CO3: Students will be able to perform Marshall Stability test and Ductility test. CO4: Study different bitumen tests. CO5: Know Softening test and Standard tar viscometer test.
1107	MTCETE207	CAD in Transportation Engineering	<ul style="list-style-type: none"> <li>• To design different elements of transportation projects.</li> <li>• To understand the Formulation and evaluation of the designs made.</li> </ul>	CO1: Study Rotary design. CO2: Study different Traffic signals. CO3: Design parking structure. CO4: Study Public transportation route. CO5: Students will be able to plan the transport for a small area.
1108	MTCETE208	Mini Project with Seminar	<ul style="list-style-type: none"> <li>• To identification of the problem</li> <li>• To use modern research tools/methods.</li> <li>• To design and conduct experiments and identify the solution of the problem/s.</li> </ul>	CO1: Handle research problems and use modern research tools/methods. CO2: Analyze and review the existing literature on a research problem. CO3: Design and conduct experiments. CO4: Write dissertation and technical reports. CO5: Publish research papers.
1109	MTCETE301A	Pavement Management System	<ul style="list-style-type: none"> <li>• To get the Knowledge of Types of Distress: Structural and functional.</li> <li>• To Analyse the Expert Systems and Pavement Management.</li> <li>• To know the Design Alternatives and Selection.</li> </ul>	CO1: Use of Ranking and Optimisation Methodologies. CO2: Know the Pavement Performance Prediction. CO3: Know and understand the Design Alternatives and Selection. CO4: Analyze Expert Systems and Pavement Management. CO5: Know of Types of Distress: Structural and functional.

## Course Outcomes

S. No.	Course Code	Course Title	Course Objective	Expected Outcome
1110	MTCETE301B	Mass Transit System Planning	<ul style="list-style-type: none"> <li>• To analyze and study of the dynamics response of single degree freedom system using fundamental theory and equation of motion.</li> <li>• To know the Impact of Transit and Recent Trends in Mass Transportation Planning and Management.</li> <li>• To come up with Knowledge of Bus Transit Planning And Scheduling.</li> </ul>	<p>CO1: Analyze and study of the dynamics response of single degree freedom system using fundamental theory and equation of motion.</p> <p>CO2: Analyze and study of Public Transport and Urban Development Strategies.</p> <p>CO3: Know of Bus Transit Planning and Scheduling.</p> <p>CO4: Analyze of Rail Transit Terminals And Performance Evaluation.</p> <p>CO5: Know the Impact of Transit and Recent Trends in Mass Transportation Planning and Management.</p>
1111	MTCETE301C	Traffic Flow Theory	<ul style="list-style-type: none"> <li>• To know the Traffic stream characteristics and Description using distributions.</li> <li>• To understand the Traffic Stream Models and Queuing Analysis.</li> <li>• To get knowledge about the Highway Capacity and Level of Service Studies.</li> </ul>	<p>CO1: Know and understand the Traffic stream characteristics and Description using distributions.</p> <p>CO2: Analyze the design concepts of Traffic Stream Models.</p> <p>CO3: Understand the Queuing Analysis.</p> <p>CO4: Get knowledge about the Highway Capacity and Level of Service Studies.</p> <p>CO5: Understand the Simulation Models and Generation of Inputs.</p>

## Course Outcomes

S. No.	Course Code	Course Title	Course Objective	Expected Outcome
1112	MTCETE302A	Business Analytics	<ul style="list-style-type: none"> <li>• To understand the role of business analytics within an organization.</li> <li>• To analyze data using statistical and data mining techniques and understand relationships</li> <li>• To understand the underlying business processes of an organization.</li> <li>• To gain an understanding of how managers use business analytics to formulate and solve business problems and to support managerial decision making.</li> <li>• To become familiar with processes needed to develop, report, and analyze business data.</li> <li>• To use decision-making tools/Operations research techniques.</li> <li>• To manage business process using analytical and management tools. Analyze and solve problems from different industries such as manufacturing, service, retail, software, banking and finance, sports, pharmaceutical, aerospace etc.</li> </ul>	<p>CO1: Understand the role of business analytics within an organization.</p> <p>CO2: Analyze data using statistical and data mining techniques and understand relationships between the underlying business processes of an organization.</p> <p>CO3: To become familiar with processes needed to develop, report, and analyze business data.</p> <p>CO4: Analyze and solve problems from different industries such as manufacturing, service, retail, software, banking and finance, sports, pharmaceutical, aerospace etc.</p> <p>CO5: Use decision-making tools/Operations research techniques.</p>
1113	MTCETE302B	Industrial Safety	<ul style="list-style-type: none"> <li>• To know about Industrial safety</li> <li>• To know about fundamental concepts of maintenance engineering.</li> <li>• To know about preventive measures to be taken.</li> </ul>	<p>CO1: Understand the role industrial safety.</p> <p>CO2: Understand fundamentals of maintenance engineering.</p> <p>CO3: Learn different methods of Wearing and Corrosion and their prevention.</p> <p>CO4: Trace out the faults occurring in various electrical systems.</p> <p>CO5: Know about Periodic and preventive maintenance of various systems.</p>

## Course Outcomes

S. No.	Course Code	Course Title	Course Objective	Expected Outcome
1114	MTCETE302C	Operations Research	<ul style="list-style-type: none"> <li>• To know about the optimization Techniques.</li> <li>• To know about Competitive Models.</li> <li>• To learn about Formulation of a LPP.</li> </ul>	CO1: Should able to carry out sensitivity analysis. CO2: Should able to model the real world problem and simulate it. CO3: Should able to apply the dynamic programming to solve problems of discreet and continuous variables. CO4: Should able to apply the concept of non-linear programming CO5: Should be able to formulate optimization techniques.
1115	MTCETE302D	Cost Management of Engineering Projects	<ul style="list-style-type: none"> <li>• To know about Cost concepts in decision-making</li> <li>• To know about Project making.</li> <li>• To know about Cost Behavior and Profit Planning</li> </ul> <p>Marginal Costing</p>	CO1: Should able to do cost management for various projects. CO2: Should able to understand the meaning of cost management. CO3: Should able to analyze Cost Behavior and Profit Planning. CO4: Understand Quantitative techniques for cost management CO5: Analyze the pricing and apply for various projects.
1116	MTCETE302E	Composite Materials	<ul style="list-style-type: none"> <li>• To know about introduction to composite materials.</li> <li>• To know about reinforcements.</li> <li>• To know about manufacturing process of composite materials.</li> </ul>	CO1: Understand Definition – Classification and characteristics of Composite materials. CO2: Know about Reinforcements. CO3: Know about manufacturing of Metal Matrix Composites. CO4: Know about manufacturing of Polymer Matrix Composites: CO5: Know about strength and laminates.
1117	MTCETE302F	Waste to Energy	<ul style="list-style-type: none"> <li>• To know about Energy waste introduction.</li> <li>• To know about Biomass process.</li> <li>• To know about various types of biomass plants and gasifiers.</li> </ul>	CO1: Know about various forms of Energy wastage. CO2: Know about Biomass introduction. CO3: Know about Biomass gasifiers. CO4: Know about Biogas properties. CO5: Know about Biomass combustion.

## Course Outcomes

S. No.	Course Code	Course Title	Course Objective	Expected Outcome
1118	MTCETE303	Dissertation-I /Industrial Project	To identification of the problem To use modern research tools/methods. To design and conduct experiments and identify the solution of the problem/s.	CO1: Handle research problems and use modern research tools/methods. CO2: Analyze and review the existing literature on a research problem. CO3: Design and conduct experiments. CO4: Write dissertation and technical reports. CO5: Publish research papers.
1119	MTCETE401	Dissertation-II	To identification of the problem To use modern research tools/methods. To design and conduct experiments and identify the solution of the problem/s.	CO1: Handle research problems and use modern research tools/methods. CO2: Analyze and review the existing literature on a research problem. CO3: Design and conduct experiments. CO4: Write dissertation and technical reports. CO5: Publish research papers.
1120	MTCESE101	Advanced Structural Analysis	<ul style="list-style-type: none"> <li>• To understand the Local Coordinates and Global Coordinates with physical significance of the members.</li> <li>• To solve problems by direct stiffness method, Structure Approach and Member Approach knowing their limitations.</li> <li>• To evaluate solutions for different type of problems.</li> </ul>	CO1: know and understand the Local Coordinates and Global Coordinates. Also the physical significance of members. CO2: Use direct stiffness method understanding its limitations. CO3: Solve problems by Structure Approach and Member Approach. CO4: Solve problems in Approximate Solution and Boundary Value Problems. CO5: Evaluate solutions for Linear Elements and Generalized One Dimensional Equilibrium Problems.
1121	MTCESE102	Advanced Solid Mechanics	<ul style="list-style-type: none"> <li>• To solve simple problems of elasticity and plasticity understanding the basic concepts.</li> <li>• To understand the Elementary Concepts of Strain, Principal Strains and Principal Axes, Compatibility Conditions and Differential Equations of other components.</li> <li>• To know about Torsion of Prismatic Bars, Plastic Deformation and other criterias related to it.</li> </ul>	CO1: Solve simple problems of elasticity and plasticity understanding the basic concepts. CO2: Understand the Elementary Concepts of Strain, Principal Strains and Principal Axes, Compatibility Conditions and Differential Equations of other components. CO3: Apply numerical methods to solve continuum problems. CO4: Obtain the Two-Dimensional Problems in Polar Coordinates and also the problems related to Plane Stress and Plane Strain. CO5: Know and analyze the Torsion of Prismatic Bars, Plastic Deformation and other criterias related to it.

## Course Outcomes

S. No.	Course Code	Course Title	Course Objective	Expected Outcome
1122	MTCESE103A	Theory of Thin Plates and Shells	<ul style="list-style-type: none"> <li>• To understand Circular Plates and Rectangular Plates and also can solve equations in Polar Co-ordinates.</li> <li>• To realize the Space Curves, Surfaces, Shell Co-ordinates. Also they will get the ideas about the Shell theory and Virtual Work.</li> <li>• To know various Shells of Revolution with Bending Resistance and Thermal Stresses. Also a brief knowledge of Pipes and Pressure Vessels.</li> </ul>	<p>CO1: Analyze the Space Curves, Surfaces, Shell Co-ordinates. Also they will get the ideas about the Shell theory and Virtual Work.</p> <p>CO2: Use analytical methods for the solution of thin plates and shells.</p> <p>CO3: Understand Circular Plates and Rectangular Plates and also can solve equations in Polar Co-ordinates.</p> <p>CO4: Apply the numerical techniques and tools for the complex problems in thin plates and shells.</p> <p>CO5: Know various Shells of Revolution with Bending Resistance and Thermal Stresses. Also a brief knowledge of Pipes and Pressure Vessels.</p>
1123	MTCESE103B	Theory and Applications of Cement Composites	<ul style="list-style-type: none"> <li>• To Know the effect and behavior of Mechanical Properties of Cement Composites.</li> <li>• To know the Construction Techniques for Fibre Reinforced Concrete and other Cement Composites.</li> <li>• To analyse and design structural elements made of cement composites.</li> </ul>	<p>CO1: Understand the Composite Materials and their characteristics. Formulate constitutive behaviour of composite materials – Ferro cement, SIFCON and Fibre Reinforced Concrete - by understanding their strain- stress behaviour.</p> <p>CO2: Estimate strain constants using theories applicable to composite materials.</p> <p>CO3: Know the Construction Techniques for Fibre Reinforced Concrete and other Cement Composites.</p> <p>CO4: Know the effect and behavior of Mechanical Properties of Cement Composites.</p> <p>CO5: Analyse and design structural elements made of cement composites. Classify the materials as per orthotropic and anisotropic behaviour.</p>
1124	MTCESE103C	Theory of Structural Stability	<ul style="list-style-type: none"> <li>• To study the design criterias and stability of the structures.</li> <li>• To use the stability criteria and concepts for analysing discrete and continuous systems</li> </ul>	<p>CO1: Use stability criteria and concepts for analysing discrete and continuous systems</p> <p>CO2: Determine stability of columns and frames.</p> <p>CO3: Identify and solve problems by related to columns and frames.</p> <p>CO4: Determine stability of beams and plates.</p> <p>CO5: Identify and solve problems related to beams and plates.</p>

## Course Outcomes

S. No.	Course Code	Course Title	Course Objective	Expected Outcome
1125	MTCESE104A	Analytical and Numerical Methods for Structural Engineering	<ul style="list-style-type: none"> <li>• To apply statistical techniques to analyze Solution of Nonlinear Algebraic and Transcendental Equations.</li> <li>• To solve Differentiation &amp; Integration and other matrix problems and apply these to structural engineering.</li> </ul>	<p>CO1: Identify and solve engineering problems by applying the Fundamentals of Numerical Methods like Approximations, Interpolation and extrapolation.</p> <p>CO2: Apply statistical techniques to analyze Solution of Nonlinear Algebraic and Transcendental Equations.</p> <p>CO3: Identify and solve Elements of Matrix Algebra and Linear Equations.</p> <p>CO4: Solve Differentiation &amp; Integration.</p> <p>CO5: Analyze and solve the Computer Algorithms and logical networks with ease.</p>
1126	MTCESE104B	Structural Health Monitoring	<ul style="list-style-type: none"> <li>• To learn the new concepts related to structural health monitoring.</li> <li>• To assess the health of structure using static and dynamic field methods.</li> <li>• To assess different techniques for repair and rehabilitation of structures.</li> </ul>	<p>CO1: Diagnosis of the distress in the structure understanding the causes and factors.</p> <p>CO2: Assess the health of structure using static field methods.</p> <p>CO3: Assess the health of structure using dynamic field tests.</p> <p>CO4: Suggest repairs and rehabilitation measures of the structure.</p> <p>CO5: Assessing and understanding different techniques for repair and rehabilitation of structures.</p>
1127	MTCESE104C	Seismic Design of Structures	<ul style="list-style-type: none"> <li>• To understand the study of different elements of Engineering seismology.</li> <li>• To apply the Seismic design philosophy using the provisional codes.</li> <li>• To solve problems in bridges and dams using Codal provisions.</li> </ul>	<p>CO1: Understand the study of different elements of Engineering seismology.</p> <p>CO2: Learn basic Seismic behavior of the structural elements.</p> <p>CO3: Apply the Seismic design philosophy using the provisional codes.</p> <p>CO4: Students will be able to solve problems in bridges and dams using Codal provisions.</p> <p>CO5: Evaluate the modern concepts and base isolation techniques.</p>

## Course Outcomes

S. No.	Course Code	Course Title	Course Objective	Expected Outcome
1128	MTCESE105	Research Methodology and IPR	<ul style="list-style-type: none"> <li>• To understand research problem formulation.</li> <li>• To analyze research related information</li> <li>• To follow research ethics</li> <li>• To understand that today's world is controlled by Computer, Information Technology, but tomorrow world will be ruled by ideas, concept, and creativity.</li> </ul>	<p>CO1: Understand research problem formulation. Analyze research related information &amp; Follow research ethics.</p> <p>CO2: Understand that today's world is controlled by Computer, Information Technology, but tomorrow world will be ruled by ideas, concept, and creativity.</p> <p>CO3: Understanding that when IPR would take such important place in growth of individuals &amp; nation, it is needless to emphasize the need of information about Intellectual Property Right to be promoted among students in general &amp; engineering in particular.</p> <p>CO4: Understand that IPR protection provides an incentive to inventors for further research work and investment in R &amp; D, which leads to creation of new and better products, and in turn brings about, economic growth and social benefits.</p>
1129	MTCESE106	Audit Course - 1 AUDIT 1 and 2 : English for Research Paper Writing AUDIT 1 and 2: Disaster Management AUDIT 1 and 2 : Sanskrit For Technical Knowledge AUDIT 1 and 2 : Value Education AUDIT 1 and 2 : Constitution Of India AUDIT 1 and 2 : Pedagogy Studies AUDIT 1 and 2: Stress Management by Yoga AUDIT 1 and 2: Personality Development through Life Enlightenment Skills	<ul style="list-style-type: none"> <li>• To learn to achieve the highest goal happily</li> <li>• To become a person with stable mind, pleasing personality and determination</li> <li>• To awaken wisdom in students</li> </ul>	<p>CO1: Knowledge of Neetisatakam - Holistic development of personality.</p> <p>CO2: Approach to day to day work and duties.</p> <p>CO3: Understanding the Theory of Statements of basic knowledge.</p> <p>CO4: Understanding the Personality of Role model. Shrimad Bhagwad Geeta.</p> <p>CO5: Study of Personality Development through Life Enlightenment Skills.</p>

## Course Outcomes

S. No.	Course Code	Course Title	Course Objective	Expected Outcome
1130	MTCESE107	Structural Design Lab	<ul style="list-style-type: none"> <li>• To understand the structural design in detail.</li> <li>• To design and detail structural components of Frame Buildings or Multi-Storey Frame Buildings.</li> </ul>	CO1: Design and detail all the structural components of Frame Buildings. CO2: Design and detail complete Multi-Storey Frame Buildings. CO3: Analysis of different building frames. CO4: Study of reinforcement laid in structures. CO5: Study of beams, columns and slabs in detail.
1131	MTCESE108	Advanced Concrete Lab	<ul style="list-style-type: none"> <li>• To learn the concept of strength in tension or compression and cyclic loading on steel.</li> <li>• To conduct Non-Destructive Tests on existing concrete structures.</li> <li>• To apply the engineering principles to understand behaviour of structural elements.</li> </ul>	CO1: Design high grade concrete and study the parameters affecting its performance. CO2: Conduct Non Destructive Tests on existing concrete structures. CO3: Apply engineering principles to understand behaviour of structural elements. CO4: Study effect of cyclic loading. CO5: Knowledge of split tensile strength.
1132	MTCESE201	FEM in Structural Engineering	<ul style="list-style-type: none"> <li>• To use Finite Element Method for structural analysis and understand the concepts related to it.</li> <li>• To solve continuum problems using finite element analysis..</li> <li>• To understand the analysis of Strain and Stress Computations.</li> </ul>	CO1: Use and analysis of Finite Element Method for structural analysis. CO2: Execute the Finite Element Program/ Software. CO3: Solve continuum problems using finite element analysis. CO4: Analyze of Strain and Stress Computations. CO5: Implementation of FEM procedure.
1133	MTCESE202	Structural Dynamics	<ul style="list-style-type: none"> <li>• To analyze and study dynamics response of single degree freedom system using fundamental theory and equation of motion.</li> <li>• To analyze and study dynamics response of Multi degree freedom system using fundamental theory and equation of motion.</li> <li>• To study the Dynamics of Wind Loading and Moving Loads.</li> </ul>	CO1: Analyze and study dynamics response of single degree freedom system using fundamental theory and equation of motion. CO2: Analyze and study dynamics response of Multi degree freedom system using fundamental theory and equation of motion. CO3: Use the available software for dynamic analysis. CO4: Analyze of Multiple Degree of Freedom, Strain and Stress Computations. CO5: Analyze the dynamics of Wind Loading and Moving Loads.

## Course Outcomes

S. No.	Course Code	Course Title	Course Objective	Expected Outcome
1134	MTCESE203A	Advanced Steel Design	<ul style="list-style-type: none"> <li>• To understand P-Effect and drift criterias.</li> <li>• To design steel structures/ components by different design processes.</li> <li>• To analyze and design beams and columns for stability and strength, and drift.</li> </ul>	CO1: Design steel structures/ components by different design processes. CO2: Analyze and design beams and columns for stability and strength, and drift. CO3: Design welded and bolted connections. CO4: Understand and evaluating the different methods of design. CO5: Understand P Effect and drift criterias.
1135	MTCESE203B	Design of Formwork	<ul style="list-style-type: none"> <li>• To know the concept and design criterias of formwork.</li> <li>• To design the form work for Beams, Slabs, columns, Walls and Foundations.</li> <li>• To understand the working of flying formwork and its failure.</li> </ul>	CO1: Select the proper formwork, accessories and material. CO2: Design the form work for Beams, Slabs, columns, Walls and Foundations. CO3: Design the form work for Special Structures. CO4: Understand the working of flying formwork. CO5: Judge the formwork failures through case studies.
1136	MTCESE203C	Design of High Rise Structures	<ul style="list-style-type: none"> <li>• To know the design criterias of High rise structures.</li> <li>• To analyse, design and detail Transmission/ TV tower, Mast and Trestles with different loading conditions.</li> <li>• To analyse, design and detail the tall buildings subjected to different loading conditions using relevant codes.</li> </ul>	CO1: Analyse, design and detail Transmission/ TV tower, Mast and Trestles with different loading conditions. CO2: Analyse, design and detail the RC and Steel Chimney. CO3: Analyse, design and detail the tall buildings subjected to different loading conditions using relevant codes. CO4: Design provisions for fire-fighting. CO5: Application of software in analysis and design.
1137	MTCESE203D	Design of Masonry Structures	<ul style="list-style-type: none"> <li>• To know the design criterias of Masonry structures.</li> <li>• To design and analyse Reinforced Masonry Members. Determine interactions between members.</li> <li>• To Perform elastic and Inelastic analysis of masonry walls and check the stability.</li> </ul>	CO1: Understand the masonry design approaches. CO2: Analyse Reinforced Masonry Members. Determine interactions between members. CO3: Determine shear strength and ductility of Reinforced Masonry members. CO4: Check the stability of walls. CO5: Perform elastic and Inelastic analysis of masonry walls.

## Course Outcomes

S. No.	Course Code	Course Title	Course Objective	Expected Outcome
1138	MTCESE204A	Design of Advanced Concrete Structures	<ul style="list-style-type: none"> <li>• To know the design criterias of Advanced concrete structures.</li> <li>• To design and prepare detail structural drawings for execution citing relevant IS codes.</li> <li>• To understand the types of tensional bending and shear wall.</li> </ul>	CO1: Analyse the special structures by understanding their behaviour. CO2: Design and prepare detail structural drawings for execution citing relevant IS codes. CO3: Design of shear wall. CO4: Understand types of tensional bending. CO5: Analyze and designing through different IS codes.
1139	MTCESE204B	Advanced Design of Foundations	<ul style="list-style-type: none"> <li>• To know the design criterias of Advanced design of foundations.</li> <li>• To design and understand the analysis methods for well and shallow foundations.</li> <li>• Students will be able to analyze the tunnels and dams.</li> </ul>	CO1: Decide the suitability of soil strata for different projects. CO2: Design shallow foundations deciding the bearing capacity of soil. CO3: Analyze and design the pile foundation. CO4: Understand the analysis methods for well foundation. CO5: Analyze and design the coffer dams.
1140	MTCESE204C	Soil Structure Interaction	<ul style="list-style-type: none"> <li>• To understand the soil structures and their interactions.</li> <li>• To evaluate soil structure interaction for different types of structure under various conditions of loading and subsoil characteristics.</li> <li>• To prepare comprehensive design oriented computer programs for interaction problems based on theory of sub grade reaction such as beams, footings, rafts etc.</li> </ul>	CO1: Understand soil structure interaction concept and complexities involved. CO2: Evaluate soil structure interaction for different types of structure under various conditions of loading and subsoil characteristics. CO3: Prepare comprehensive design oriented computer programs for interaction problems based on theory of sub grade reaction such as beams, footings, rafts etc. CO4: Analyze different types of frame structure founded on stratified natural deposits with linear and non-linear stress-strain characteristics. CO5: Evaluate action of group of piles considering stress-strain characteristics of real soils.

## Course Outcomes

S. No.	Course Code	Course Title	Course Objective	Expected Outcome
1141	MTCESE204D	Design of Industrial Structure	<ul style="list-style-type: none"> <li>• To understand about the materials used and design of industrial structural elements.</li> <li>• To know the basic concepts and design of power plant structures</li> <li>• To understand the design concepts of Chimneys, bunkers and silos</li> </ul>	<p>CO1: Plan the functional requirements of structural systems for various industries.</p> <p>CO2: Get an idea about the materials used and design of industrial structural elements.</p> <p>CO3: Realize the basic concepts and design of power plant structures</p> <p>CO4: Design Power transmission structures.</p> <p>CO5: Possess the ability to understand the design concepts of Chimneys, bunkers and silos.</p>
1142	MTCESE205	Audit Course - 2 AUDIT 1 and 2 : English for Research Paper Writing AUDIT 1 and 2: Disaster Management AUDIT 1 and 2 : Sanskrit For Technical Knowledge AUDIT 1 and 2 : Value Education AUDIT 1 and 2 : Constitution Of India AUDIT 1 and 2 : Pedagogy Studies AUDIT 1 and 2: Stress Management by Yoga AUDIT 1 and 2: Personality Development through Life Enlightenment Skills	<ul style="list-style-type: none"> <li>• To achieve overall health of body and mind</li> <li>• To overcome stress</li> </ul>	<p>CO1: Knowledge of Eight parts of yog ( Ashtanga ).</p> <p>CO2: Understanding the Do's and Don't's in life.</p> <p>CO3: Knowledge and application of Ahinsa, satya, astheya, bramhacharya, aparigraha, Shaucha, santosh, tapa, swadhyay, ishwarpranidhan.</p> <p>CO4: Practicing Asan and Pranayam..</p> <p>CO5: Regularization of breathing techniques and its effects.</p>
1143	MTCESE206	Model Testing Lab	<ul style="list-style-type: none"> <li>• To understand the model testing of dynamics, statics and vibrations.</li> <li>• To study response of structures and its elements against extreme loading events.</li> <li>• To conduct Model Testing on concrete structures.</li> </ul>	<p>CO1: Study response of structures and implement its elements against extreme loading events.</p> <p>CO2: Conduct Model Testing on concrete structures.</p> <p>CO3: Apply and evaluation of dynamic modulus.</p> <p>CO4: Study and analyze the effects of vibration.</p> <p>CO5: Know and interpretation of vibration Characteristics.</p>

## Course Outcomes

S. No.	Course Code	Course Title	Course Objective	Expected Outcome
1144	MTCESE207	Numerical Analysis Lab	<ul style="list-style-type: none"> <li>• To understand the different numerical and their solutions.</li> <li>• To apply the approximations and integrations to the solutions.</li> </ul>	CO1: study roots of Non-Linear Equations. CO2: solve System of Linear Equations. CO3: Apply and calculating Least Square Approximations. CO4: Study and analysis of integration of numerical. CO5: Know different numerical and their solutions.
1145	MTCESE208	Mini Project with Seminar	<ul style="list-style-type: none"> <li>• To identification of the problem</li> <li>• To use modern research tools/methods.</li> <li>• To design and conduct experiments and identify the solution of the problem/s.</li> </ul>	CO1: Enable the Students to undertake short research project under the direction of guide CO2: impart skills in preparing detailed report describing the project and results. CO3: enable the students to undertake fabrication work of new experimental set up/devices CO4:Effectively communicate by making an oral presentation before an evaluation committee
1146	MTCESE301A	Design of Prestressed Concrete Structures	<ul style="list-style-type: none"> <li>• To design pre-stressed concrete deck slab and beam/ girders.</li> <li>• To find out losses in the pre-stressed concrete and understand the basic aspects of pre- stressed concrete fundamentals, including pre and post-tensioning processes.</li> <li>• To analyse and design the pre-cast composite construction.</li> </ul>	CO1: Find out losses in the pre-stressed concrete. Understand the basic aspects of pre- stressed concrete fundamentals, including pre and post-tensioning processes. CO2: Analyse pre-stressed concrete deck slab and beam/ girders. CO3: Design pre-stressed concrete deck slab and beam/ girders. CO4: Design of end blocks for pre-stressed members. CO5: Analysis and design of pre-cast composite construction.
1147	MTCESE301B	Analysis of Laminated Composite Plates	<ul style="list-style-type: none"> <li>• To analyse the rectangular composite plates using the analytical methods</li> <li>• To develop the computer programs for the analysis of composite plates.</li> <li>• To understand the concepts of FEM.</li> </ul>	CO1: Analyse the rectangular composite plates using the analytical methods. CO2: Analyse the composite plates using advanced finite element method. CO3: Develop the computer programs for the analysis of composite plates. CO4: Understanding and finding the concepts of FEM. CO5: Analysis of Rectangular Composite Plates and Computation of Stresses.

## Course Outcomes

S. No.	Course Code	Course Title	Course Objective	Expected Outcome
1148	MTCESE301C	Fracture Mechanics of Concrete Structures	<ul style="list-style-type: none"> <li>• To identify cracking of concrete structures based on fracture mechanics</li> <li>• To get the knowledge of Damage mechanics and Numerical modeling.</li> </ul>	CO1: Identify and classify cracking of concrete structures based on fracture mechanics. CO2: Implement stress intensity factor for notched members CO3: Apply fracture mechanics models to high strength concrete and FRC structures. CO4: Compute J-integral for various sections understanding the concepts of LEFM. CO5: Knowledge and understanding of of Damage mechanics and Numerical modeling.
1149	MTCESE301 D	Design of Plates and Shells	<ul style="list-style-type: none"> <li>• To get the knowledge of design criterias of plates and shells.</li> <li>• To get the approximate Solutions for the problems in designing plates and shells.</li> </ul>	CO1: Analyse and design prismatic folded plate systems. CO2: Analyse and design shells using approximate solutions. CO3: Analyse and Design Cylindrical Shells. CO4: Design Doubly Curved Shells using Approximate Solutions. CO5: Analyze and solve the Approximate Solutions.
1150	MTCESE302A	Business Analytics	<ul style="list-style-type: none"> <li>• To understand the role of business analytics within an organization.</li> <li>• To analyze data using statistical and data mining techniques and understand relationships</li> <li>• To understand the underlying business processes of an organization.</li> <li>• To gain an understanding of how managers use business analytics to formulate and solve business problems and to support managerial decision making.</li> <li>• To become familiar with processes needed to develop, report, and analyze business data.</li> <li>• To use decision-making tools/Operations research techniques.</li> <li>• To manage business process using analytical and management tools. Analyze and solve problems from different industries such as manufacturing, service, retail, software, banking and finance, sports, pharmaceutical, aerospace etc.</li> </ul>	CO1: Understand the role of business analytics within an organization. CO2: Analyze data using statistical and data mining techniques and understand relationships between the underlying business processes of an organization. CO3: To become familiar with processes needed to develop, report, and analyze business data. CO4: Analyze and solve problems from different industries such as manufacturing, service, retail, software, banking and finance, sports, pharmaceutical, aerospace etc. CO5: Use decision-making tools/Operations research techniques.

## Course Outcomes

S. No.	Course Code	Course Title	Course Objective	Expected Outcome
1151	MTCESE302B	Industrial Safety	<ul style="list-style-type: none"> <li>• To know about Industrial safety</li> <li>• To know about fundamental concepts of maintenance engineering.</li> <li>• To know about preventive measures to be taken.</li> </ul>	<p>CO1: Understand the role industrial safety.</p> <p>CO2: Understand fundamentals of maintenance engineering.</p> <p>CO3: Learn different methods of Wearing and Corrosion and their prevention.</p> <p>CO4: Trace out the faults occurring in various electrical systems.</p> <p>CO5: Know about Periodic and preventive maintenance of various systems.</p>
1152	MTCESE302C	Operations Research	<ul style="list-style-type: none"> <li>• To know about the optimization Techniques.</li> <li>• To know about Competitive Models.</li> <li>• To learn about Formulation of a LPP.</li> </ul>	<p>CO1: Should able to carry out sensitivity analysis.</p> <p>CO2: Should able to model the real world problem and simulate it.</p> <p>CO3: Should able to apply the dynamic programming to solve problems of discreet and continuous variables.</p> <p>CO4: Should able to apply the concept of non-linear programming</p> <p>CO5: Should be able to formulate optimization techniques.</p>
1153	MTCESE302D	Cost Management of Engineering Projects	<ul style="list-style-type: none"> <li>• To know about Cost concepts in decision-making</li> <li>• To know about Project making.</li> <li>• To know about Cost Behavior and Profit Planning Marginal Costing</li> </ul>	<p>CO1: Should able to do cost management for various projects.</p> <p>CO2: Should able to understand the meaning of cost management.</p> <p>CO3: Should able to analyze Cost Behavior and Profit Planning.</p> <p>CO4: Understand Quantitative techniques for cost management</p> <p>CO5: Analyze the pricing and apply for various projects.</p>
1154	MTCESE302E	Composite Materials	<ul style="list-style-type: none"> <li>• To know about introduction to composite materials.</li> <li>• To know about reinforcements.</li> <li>• To know about manufacturing process of composite materials.</li> </ul>	<p>CO1: Understand Definition – Classification and characteristics of Composite materials.</p> <p>CO2: Know about Reinforcements.</p> <p>CO3: Know about manufacturing of Metal Matrix Composites.</p> <p>CO4: Know about manufacturing of Polymer Matrix Composites:</p> <p>CO5: Know about strength and laminates.</p>

## Course Outcomes

S. No.	Course Code	Course Title	Course Objective	Expected Outcome
1155	MTCESE302F	Waste to Energy	<ul style="list-style-type: none"> <li>• To know about Energy waste introduction.</li> <li>• To know about Biomass process.</li> <li>• To know about various types of biomass plants and gasifiers.</li> </ul>	CO1: Know about various forms of Energy wastage. CO2: Know about Biomass introduction. CO3: Know about Biomass gasifiers. CO4: Know about Biogas properties. CO5: Know about Biomass combustion.
1156	MTCESE303	Dissertation-I /Industrial Project	<p>To identification of the problem  To use modern research tools/methods.  To design and conduct experiments and identify the solution of the problem/s.</p>	CO1: handle research problems and use modern research tools/methods. CO2: analyze and review the existing literature on a research problem. CO3: design and conduct experiments. CO4: write dissertation and technical reports. CO5: publish research papers.
1157	MTCESE401	Dissertation-II	<p>To identification of the problem  To use modern research tools/methods.  To design and conduct experiments and identify the solution of the problem/s.</p>	CO1: handle research problems and use modern research tools/methods. CO2: analyze and review the existing literature on a research problem. CO3: design and conduct experiments. CO4: write dissertation and technical reports. CO5: publish research papers.
1158	MTMEPE101	Computer Aided Process planning	<ul style="list-style-type: none"> <li>• To learn the concepts of effect of machining parameters on production rate, cost and surface quality and determines the manufacturing tolerances.</li> <li>• Understand the various types of Structure of Automated process planning system.</li> <li>• Apply modern computational, analytical, tools and techniques to face the challenges in CAPP.</li> <li>• Design and develop CAPP systems using the knowledge of mathematics, science, engineering and IT tools.</li> </ul>	CO1: Explain the structure of automated process planning system and uses the principle of generative and retrieval CAPP systems for automation. CO2: Select the manufacturing sequence and explains the reduction of total set up cost for a particular sequence. CO3: Explain the effect of machining parameters on production rate, cost and surface quality and determines the manufacturing tolerances. CO4: Explain the generation of tool path and solve optimization models of machining processes. CO5: Create awareness about the implementation techniques for CAPP.

## Course Outcomes

S. No.	Course Code	Course Title	Course Objective	Expected Outcome
1159	MTMEPE102	Quality Management Systems	<ul style="list-style-type: none"> <li>• Understand the principles of quality management and applied quality engineering methods.</li> <li>• Learn methods of statistical process control</li> <li>• Understand sampling problems and learn acceptance sampling plans methods.</li> <li>• To use Modern tool of quality checking in the industries.</li> </ul>	<p>CO1: Implement quality concepts in industrial environments and its management.</p> <p>CO2: Develop control charts for variables and attributes.</p> <p>CO3: Explain sampling plans using multiple and sequential sampling.</p> <p>CO4: Use of Modern tools like implementation-KAIZEN, POKA YOKE, Six sigma etc.</p>
1160	MTMEPE103A	Ergonomics and Work System Design	<ul style="list-style-type: none"> <li>• To Describe the breadth of how ergonomics is used in today's society.</li> <li>• To Distinguish between the various standards organizations (i.e. CSA, ANSI, ISO, etc.)</li> <li>• To Design/development of solutions for Man Machine Systems, Man machine communication, design and arrangements of controls and displays.</li> <li>• To Apply the knowledge of science, engineering fundamentals</li> <li>• To analyze problems of Man machine communication, design and arrangements of controls and displays</li> </ul>	<p>CO1: Describe the breadth of how ergonomics is used in today's society.</p> <p>CO2: Understand distinguishes between the various standards organizations (i.e. CSA, ANSI, ISO, etc.)</p> <p>CO3: Design/development of solutions for Man Machine Systems, Man machine communication, design and arrangements of controls and displays.</p> <p>CO4: Apply the knowledge of science, engineering fundamentals</p> <p>CO5: Analyze problems of Man machine communication, design and arrangements of controls and displays.</p>
1161	MTMEPE103B	Energy Management	<ul style="list-style-type: none"> <li>• Understand the importance of Energy storage.</li> <li>• To learn the techniques of heat recovery systems.</li> <li>• Learn the methods of energy management and audits.</li> <li>• Able to play a role as an engineer in the society by understanding the economics and management</li> <li>• Problem analysis of Electrical Load and Lighting Management</li> </ul>	<p>CO1:Understand the importance of Energy storage for process industries.</p> <p>CO2:Learn the techniques of heat recovery systems.</p> <p>CO3: Learn the methods of energy management and audits.</p> <p>CO4:Play a role as an engineer in the society by understanding the economics.</p> <p>CO5:Problem analysis of Electrical Load and Lighting Management.</p>

## Course Outcomes

S. No.	Course Code	Course Title	Course Objective	Expected Outcome
1162	MTMEPE103C	Machine Tool Design	<ul style="list-style-type: none"> <li>• To learn the concepts of machining.</li> <li>• To understand the various types of Guide-ways and power Screws.</li> <li>• Know about tool life, MRR, Cutting forces and surface finish in different machining process.</li> <li>• Understand the concept of Design of Machine Tool Structure.</li> <li>• Realize the importance of Dynamic characteristics of cutting process.</li> </ul>	<p>CO1: Classify the different types of guide ways and power screws.</p> <p>CO2: Explain principles and process of Forging, Rolling, Extrusion, drawing and designing of die.</p> <p>CO3: Analyses the tool life, MRR, Cutting forces and surface finish.</p> <p>CO4: Apply the knowledge of science in fundamentals of machine tool structures and their requirements and material.</p> <p>CO5: Understand the modern technique of Dynamics of Machines Tools.</p>
1163	MTMEPE104A	Lean Manufacturing	<ul style="list-style-type: none"> <li>• To understand lean management principles &amp; provides an understanding of factors that contribute to organizational wastes, examining ways to eliminate wastes, &amp; developing &amp; implementing an improved organizational processes, for significant impact on society.</li> <li>• To understand how lean management today represents a profound change in the competitive business culture and a leading indicator of excellence in the organization.</li> <li>• To understand how lean management principles is developed from Toyota Production System (TPS)</li> <li>• Developing an understanding of basic principles of Shortening Of Production Lead Times.</li> <li>• To understand how by implementing lean management organizations can improve product &amp; processes without adding any more money, people, equipment, inventory or space and aim for perfection.</li> </ul>	<p>CO1: Understand issues &amp; challenges in implementing &amp; developing lean manufacturing techniques from TPS &amp; its contribution for improving organizational performance.</p> <p>CO2: Apply lean techniques to bring competitive business culture for improving organization performance.</p> <p>CO3: Analyze how Just In Time Production System techniques can be applied to manufacturing &amp; service industry.</p> <p>CO4: Develop lean management strategy for changing customer demand, dealing with the customer, future of lean production.</p> <p>CO5: Apply ethical principles by analyzing how lean technique can increase worker morale, foundation for improvements.</p>

## Course Outcomes

S. No.	Course Code	Course Title	Course Objective	Expected Outcome
1164	MTMEPE104B	Product Engineering	<ul style="list-style-type: none"> <li>• To introduce the objectives of product design and the requirements of a good product design.</li> <li>• To expose the students to different design principles like designing for function, production, installation and handling, maintenance, packaging etc.</li> <li>• To expose them to the latest Materials Handling for long life achievements.</li> </ul>	<p>CO1: Apply the principles of product design to modify existing engineering systems or to develop new artifacts.</p> <p>CO2: Design a system taking into consideration the concepts of ease of production, maintenance, handling, installation etc.</p> <p>CO3: Translate the concepts of economics in design, optimization of design and human factors approach to product design.</p> <p>CO4: Recognize the long life learning experience by Materials Handling, Packaging and Warehouse Functionality.</p>
1165	MTMEPE104C	Mechatronics	<ul style="list-style-type: none"> <li>• To learn about various sensors and microcontrollers.</li> <li>• To be able to build automated solutions using advance techniques.</li> <li>• To use Architecture of intelligent machines.</li> <li>• To understand the application of sensors in manufacturing system.</li> </ul>	<p>CO1: Select and use appropriate Transducers &amp; Sensors for automated solutions.</p> <p>CO2: Design and implements digital logics using various gates.</p> <p>CO3: Program and implement solutions using various Microcontrollers and Microprocessor</p> <p>CO4: Program and automated solutions using PLC.</p> <p>CO5: Use of modern tool with engineering knowledge in Analog and digital sensors for motion measurement.</p>

## Course Outcomes

S. No.	Course Code	Course Title	Course Objective	Expected Outcome
1166	MTMEPE105	Research Methodology and IPR	<ul style="list-style-type: none"> <li>• Understand research problem formulation.</li> <li>• Analyze research related information</li> <li>• Follow research ethics</li> <li>• Understand that today's world is controlled by Computer, Information Technology, but tomorrow world will be ruled by ideas, concept, and creativity.</li> <li>• Understanding that when IPR would take such important place in growth of individuals &amp; nation, it is needless to emphasize the need of information about Intellectual Property Right to be promoted among students in general &amp; engineering in particular.</li> <li>• Understand that IPR protection provides an incentive to inventors for further research work and investment in R &amp; D, which leads to creation of new and better products, and in turn brings about, economic growth and social benefits.</li> </ul>	<p>CO1: Understand research problem formulation. Analyze research related information &amp; Follow research ethics.</p> <p>CO2: Understand that today's world is controlled by Production Technology, but tomorrow world will be ruled by ideas, concept, and creativity.</p> <p>CO3: Understanding that when IPR would take such important place in growth of individuals &amp; nation, it is needless to emphasize the need of information about Intellectual Property Right to be promoted among students in general &amp; engineering in particular.</p> <p>CO4: Understand that IPR protection provides an incentive to inventors for further research work and investment in R &amp; D, which leads to creation of new and better products, and in turn brings about, economic growth and social benefits.</p>

## Course Outcomes

S. No.	Course Code	Course Title	Course Objective	Expected Outcome
1167	MTMEPE106	Audit Course - 1 AUDIT 1 and 2 : English for Research Paper Writing AUDIT 1 and 2: Disaster Management AUDIT 1 and 2 : Sanskrit For Technical Knowledge AUDIT 1 and 2 : Value Education AUDIT 1 and 2 : Constitution Of India AUDIT 1 and 2 : Pedagogy Studies AUDIT 1 and 2: Stress Management by Yoga AUDIT 1 and 2: Personality Development through Life	<ul style="list-style-type: none"> <li>• To learn to achieve the highest goal happily</li> <li>• To become a person with stable mind, pleasing personality and determination</li> <li>• To awaken wisdom in students</li> </ul>	CO1: Knowledge of Neetisatakam - Holistic development of personality. CO2: Approach to day to day work and duties. CO3: Understanding the Theory of Statements of basic knowledge. CO4: Understanding the Personality of Role model. Shrimad Bhagwad Geeta. CO5: Study of Personality Development through Life Enlightenment Skills.
1168	MTMEPE107	Ergonomics and Work System Design Lab	<ul style="list-style-type: none"> <li>• This laboratory aims to carry out education, research, and community service in order to produce an effective, safe, healthy and efficient work system that can improve human work productivity. This effective, safe, healthy and efficient work system is formed from the design of a good work system in the sense of fulfilling the ergonomic aspects of the existing work environment</li> </ul>	CO1:Develop a case for productivity improvement in any manufacturing or service industry scenario. CO2: Independently conduct a method study in any organization with the objective of improving a process, material movement system or design of a work place. CO3: Develop time standards for operations, identify production bottlenecks and improvise operations. CO4: Apply principles of good ergonomic design of work areas and equipment.
1169	MTMEPE108	Manufacturing Lab	<ul style="list-style-type: none"> <li>• Impart knowledge to students in the latest technological topics on Production and Industrial Engineering and to provide them with opportunities in taking up advanced topics in the field of study.</li> </ul>	CO1:Develop a case for productivity improvement in any manufacturing or service industry scenario by usm. CO2:Independently conduct a method study in any organization with the objective of improving a process, material movement system or design of a work place by ecm. CO3:Develop time standards for operations, identify production bottlenecks and improvise operations.

## Course Outcomes

S. No.	Course Code	Course Title	Course Objective	Expected Outcome
1170	MTMEPE201	Enterprise Resource Planning	<ul style="list-style-type: none"> <li>• To provide a contemporary and forward-looking on the theory and practice of Enterprise Resource Planning Technology.</li> <li>• To focus on a strong emphasis upon practice of theory in Applications and Practical oriented approach.</li> <li>• To train the students to develop the basic understanding of how ERP enriches the business organizations in achieving a multidimensional growth.</li> <li>• To aim at preparing the students technological competitive and make them ready to self-upgrade with the higher technical skills.</li> </ul>	<p>CO1: Make basic use of Enterprise software, and its role in integrating business functions .</p> <p>CO2: Analyze the strategic options for ERP identification and adoption.</p> <p>CO3: Design the ERP implementation strategies.</p> <p>CO4: Create reengineered business processes for successful ERP implementation.</p>
1171	MTMEPE202	CNC Technology & Programming	<ul style="list-style-type: none"> <li>• To learn the concepts and principles of Computer aided Manufacturing (CAM).</li> <li>• To understand the various types of CAM Software's like Fanuc, Siemen's, etc. and their practical usage in manufacturing applications.</li> <li>• Understand concepts of machining for selection of appropriate machining parameters, and cutting tools for CNC milling and turning jobs.</li> <li>• Develop industrial components by interpreting 3D part models/ part drawings.</li> <li>• Understand the concepts of CAM Software, CNC technology, to convert a CNC-lathe into a CNC-Milling machine and vice-versa</li> </ul>	<p>CO1: Apply the concepts of machining for selection of appropriate machining centers, machining parameters, select appropriate cutting tools for CNC milling and turning equipment, set-up, program, and operate CNC milling and turning equipment.</p> <p>CO2: Create and validate NC part program data using manual data input (MDI) for manufacturing of required component using CNC milling or turning applications Through CAM Software's like Fanuc, Siemen's, Unimat etc.</p> <p>CO3: Produce an industrial component by interpreting 3D part model/ part drawings using Computer Aided Manufacturing technology through programming, setup, and ensuring safe operation of Computer Numerical Control (CNC) machine tools.</p> <p>CO4: Apply the concepts of CNC technology to convert a CNC-lathe into a CNC-Milling machine and vice-versa and also to carry out machining using programmed part programs.</p> <p>CO5: Develop prototype models by interpreting 3D part model/ part drawings</p>

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S. No.	Course Code	Course Title	Course Objective	Expected Outcome
1172	MTMEPE203A	Reliability, Maintenance Management & Safety	<ul style="list-style-type: none"> <li>• To learn the essentiality of reliability engineering, reliability prediction</li> <li>• To apply the knowledge of implementation of total productive maintenance</li> <li>• Students to understand the Safety Aspects in industry.</li> <li>• Understand the complex problems of Maintenance Planning and Replacement</li> </ul>	<p>CO1: Problem solving and decision making (analysis and synthesis, analytical and system thinking, intuition, judgment, result interpretation).</p> <p>CO 2: Advanced technical competence (engineering science, modeling, simulation, testing, correlation, validation, result interpretation).</p> <p>CO3: Explain Professional, legal and ethical standards (safety, environmental, quality).</p> <p>CO4: Assess your ability in formulating suitable maintenance strategies to achieve reliable a manufacturing system.</p> <p>CO5: Empower students with the skills to manage a manufacturing system to achieve continuous system availability for production.</p>
1173	MTMEPE203B	Cryogenic Systems	<ul style="list-style-type: none"> <li>• To understand the basic concepts of temperature and its application in practical uses.</li> <li>• To design and analyze the critical component of refrigeration system.</li> <li>• To study different types of refrigerators</li> <li>• To apply latest techniques in refrigeration systems</li> <li>• To understand practical applicability of the refrigeration systems</li> </ul>	<p>CO1: Understand and apply the concept of the Mechanical properties; Thermal properties; Electrical and Magnetic properties; properties of Cryogenic fluids in cryogenic process.</p> <p>CO2: Study Liquid dual pressure system; Cascaded system; Claude system, Kapitza system, Collins helium liquefaction system etc.</p> <p>CO3: Latest techniques in cryogenic like Measurement System of Low Temperature: Temperature measurement, Flow rate measurement, Liquid level measurement.</p> <p>CO4: Design and apply the Effect of heat exchanger; Effectiveness of system performance.</p> <p>CO5: Understand practical applicability in Cryogenic Storage &amp; Transfer System: Cryogenic fluid storage vessels, Insulation, Cryogenic transfer system. Vacuum Technology.</p>

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S. No.	Course Code	Course Title	Course Objective	Expected Outcome
1174	MTMEPE203C	Inventory Management	<ul style="list-style-type: none"> <li>• To introduce the objectives of inventory system for cost saving.</li> <li>• To expose the students to different Inventory Control Model.</li> <li>• To expose them to understand Inventory Control Process.</li> <li>• To enhance the capability to analyze Multi echelon Inventory Model</li> </ul>	CO1: Apply the principles of inventory system for cost saving. CO2: Design a system taking into consideration the most suitable inventory control model. CO3: Apply experimental technique of Modified Control, Distribution Requirement Planning (DRP) in inventory system. CO4: Recognize the long life learning experience by Requirement of inventory control Systems.
1175	MTMEPE204A	Cellular Manufacturing Systems	<ul style="list-style-type: none"> <li>• Concepts and applications of Cellular manufacturing systems</li> <li>• Traditional and non-traditional approaches of Problem solving</li> <li>• Performance measurement</li> <li>• Human and economical aspects of CMS.</li> </ul>	CO1: Understand the effect of manufacturing automation strategies and derive production metrics and Develop manual and APT part programs for 2D complex profiles and test the programs through simulation. CO2: Analyze automated flow lines and assembly systems, and balance the line. CO3: Design automated material handling and storage systems for a typical production system. CO4: Design a manufacturing cell and cellular manufacturing system and Develop VEDO Analysis, Comparison of Different Methods.
1176	MTMEPE204B	Concurrent Engineering	<ul style="list-style-type: none"> <li>• Understand integrated product development, concurrent engineering and product models.</li> <li>• Learn general and computational architecture of concurrent engineering environment.</li> <li>• Learn design for manufacturing &amp; assembly and development of intelligent information system.</li> <li>• To be able to use of Information Technology</li> </ul>	CO1: Develop computational architecture for concurrent engineering development architecture. CO2: Design database for integrated manufacturing and develop knowledge base for product and process. CO3: knowledge and use of Components of PLM. CO4: Understand the Importance of PLM CO5: Understand and apply the knowledge of recent techniques like RP (Rapid prototyping)

## Course Outcomes

S. No.	Course Code	Course Title	Course Objective	Expected Outcome
1177	MTMEPE204C	Robotics	<ul style="list-style-type: none"> <li>• To classify the robots and robotic arm.</li> <li>• To know the application of various sensors.</li> <li>• To design and compute kinematics of robotics.</li> <li>• To make computer program used in robotics.</li> </ul>	<p>CO1: Classify robots based on joints and arm configurations and Design application specific end effectors for robots.</p> <p>CO2: Understand the application of various sensors for direct contact and non-contact measurements and understand many modern devices and technologies used in sensors.</p> <p>CO3: Compute forward and inverse kinematics of robots and determine trajectory plan apply the knowledge in Robot anatomy, end effectors, sensors, vision systems, and kinematics.</p> <p>CO4: Program robot to perform typical tasks including Pick and Place, Stacking and Welding.</p> <p>CO5: Design and select robots for Industrial and Non-Industrial applications.</p>
1178	MTMEPE205	Audit Course - 2 AUDIT 1 and 2 : English for Research Paper Writing AUDIT 1 and 2: Disaster Management AUDIT 1 and 2 : Sanskrit For Technical Knowledge AUDIT 1 and 2 : Value Education AUDIT 1 and 2 : Constitution Of India AUDIT 1 and 2 : Pedagogy Studies AUDIT 1 and 2: Stress Management by Yoga AUDIT 1 and 2: Personality Development through Life Enlightenment Skills	<ul style="list-style-type: none"> <li>• To achieve overall health of body and mind</li> <li>• To overcome stress</li> </ul>	<p>CO1: Knowledge of Eight parts of yog ( Ashtanga ).</p> <p>CO2: Understanding the Do's and Don't's in life.</p> <p>CO3: Knowledge and application of Ahinsa, satya, astheya, bramhacharya, aparigraha, Shaucha, santosh, tapa, swadhyay, ishwarpranidhan.</p> <p>CO4: Pracicing Asan and Pranayam..</p> <p>CO5: Regularization of breathing techniques and its effects.</p>

## Course Outcomes

S. No.	Course Code	Course Title	Course Objective	Expected Outcome
1179	MTMEPE206	CNC Technology Lab	<ul style="list-style-type: none"> <li>The student is introduced to CNC programming fundamentals such as: Measurement Fundamentals; Basic Principles of CNC Machining; Programming Systems; Programming Words; the Programming Process; Machines Using CNC; and the Advantages of CNC.</li> </ul>	<p>CO1:Read the given orthographic views; i.e. visualize the 3-Dimensional model of the object shown to its orthographic views and create its CAD model.</p> <p>CO2:Describe the various manufacturing processes for material removal and understand the appropriate technology for each of the cutting processes.</p> <p>CO3:Compare and distinguish the difference between the operation and programming of a CNC machine tool using manual programming and the operation and programming of CNC machine tool using CAM systems.</p>
1180	MTMEPE207	Robotics Lab	<ul style="list-style-type: none"> <li>To understand the basic concepts associated with the design and Functioning and applications of Robots.</li> <li>To study about the drives and sensors used in Robots To learn about analyzing robot kinematics and robot programming</li> </ul>	<p>CO1:Identify a Robot for a specific application.</p> <p>CO2: Interface various Servo and hardware components with Controller based projects.</p> <p>CO3: Develop small automatic / autotronics applications with the help of Ro</p> <p>CO4:Test the robotics circuit.</p>
1181	MTMEPE208	Mini Project with Seminar	<ul style="list-style-type: none"> <li>To identification of the problem</li> <li>To use modern research tools/methods.</li> <li>To design and conduct experiments and identify the solution of the problem/s.</li> </ul>	<p>CO1: Enable the Students to undertake short research project under the direction of guide</p> <p>CO2: impart skills in preparing detailed report describing the project and results.</p> <p>CO3: enable the students to undertake fabrication work of new experimental set up/devices</p> <p>CO4: Effectively communicate by making an oral presentation before an evaluation committee</p>

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1182	MTMEPE301A	Automated Material Handling Systems	<ul style="list-style-type: none"> <li>• To understand automated material handling systems and integration of material handling and storage.</li> <li>• To Design automated material handling and storage systems for a typical production system.</li> <li>• To understand the latest technology in the material handling system.</li> <li>• To use and analyze the transport and storage system.</li> </ul>	<p>CO1: To understand automated storage, transportation, Lay out of the plant.</p> <p>CO2: To apply the knowledge of the robots and monorails system in the plant lay out.</p> <p>CO3: To design the plant layout as per the current demand by using the latest equipment that is used for the transport and storage.</p> <p>CO4: To study the basic principles of material handling and apply them in practical uses.</p> <p>CO5: Use of latest technology in the plant layout with the help of knowledge of the robots.</p>
1183	MTMEPE301B	Supply Chain Practice & Procedure	<ul style="list-style-type: none"> <li>• To recognize the relationship and motivations of suppliers and distributors to ensure supplies and Importance of supply chain</li> <li>• To Utilize information technology and various quantitative and qualitative approaches and logistics management</li> <li>• To Design factors of supply chain and Develop applied research skills</li> <li>• Sourcing and revenue management</li> <li>• To Acquire familiarity and a working knowledge.</li> </ul>	<p>CO1: Develop a systematic framework for analyzing the behavior of large and complex supply chain networks.</p> <p>CO2: Recognize the relationship and motivations of suppliers and distributors to ensure supplies of raw materials and markets for finished goods.</p> <p>CO3: Utilize information technology and various quantitative and qualitative approaches that reduce production, inventory and transportation costs, and improve service levels and profitability.</p> <p>CO4: Develop applied research skills which can help you in the analysis of emerging supply chain management issues.</p> <p>CO5: Acquire familiarity and a working knowledge of the principles and practice of operations management as applied to the service industries.</p>

## Course Outcomes

S. No.	Course Code	Course Title	Course Objective	Expected Outcome
1184	MTMEPE 302A	Business Analytics	<ul style="list-style-type: none"> <li>• To learn the concept of how to learn patterns and concepts from data without being explicitly programmed in various IOT nodes.</li> <li>• To design and analyse various machine learning algorithms and techniques with a modern outlook focusing on recent advances.</li> <li>• Explore supervised and unsupervised learning paradigms of machine learning.</li> <li>• To explore Deep learning technique and various feature extraction strategies.</li> </ul>	<p>CO1: Understand the role of business analytics within an organization.</p> <p>CO2: Analyze data using statistical and data mining techniques and understand relationships between the underlying business processes of an organization.</p> <p>CO3: Become familiar with processes needed to develop, report, and analyze business data.</p> <p>CO4: Analyze and solve problems from different industries such as manufacturing, service, retail, software, banking and finance, sports, pharmaceutical, aerospace etc.</p> <p>CO5: Use decision-making tools/Operations research techniques.</p>
1185	MTMEPE 302B	Industrial Safety	<ul style="list-style-type: none"> <li>• To learn the concept of how to learn patterns and concepts from data without being explicitly programmed in various IOT nodes.</li> <li>• To design and analyse various machine learning algorithms and techniques with a modern outlook focusing on recent advances.</li> <li>• Explore supervised and unsupervised learning paradigms of machine learning.</li> <li>• To explore Deep learning technique and various feature extraction strategies.</li> </ul>	<p>CO1: Understand the role industrial safety.</p> <p>CO2: Understand fundamentals of maintenance engineering.</p> <p>CO3: Learn different methods of Wearing and Corrosion and their prevention.</p> <p>CO4: Trace out the faults occurring in various electrical systems.</p> <p>CO5: Know about Periodic and preventive maintenance of various systems.</p>
1186	MTMEPE 302C	Operations Research	<ul style="list-style-type: none"> <li>• To learn the concept of how to learn patterns and concepts from data without being explicitly programmed in various IOT nodes.</li> <li>• To design and analyse various machine learning algorithms and techniques with a modern outlook focusing on recent advances.</li> <li>• Explore supervised and unsupervised learning paradigms of machine learning.</li> <li>• To explore Deep learning technique and various feature extraction strategies.</li> </ul>	<p>CO1: Should able to carry out sensitivity analysis.</p> <p>CO2: Should able to model the real world problem and simulate it.</p> <p>CO3: Should able to apply the dynamic programming to solve problems of discreet and continuous variables.</p> <p>CO4: Should able to apply the concept of non-linear programming</p> <p>CO5: Should be able to formulate optimization techniques.</p>

## Course Outcomes

S. No.	Course Code	Course Title	Course Objective	Expected Outcome
1187	MTMEPE 302D	Cost Management of Engineering Projects	<ul style="list-style-type: none"> <li>• To learn the concept of how to learn patterns and concepts from data without being explicitly programmed in various IOT nodes.</li> <li>• To design and analyse various machine learning algorithms and techniques with a modern outlook focusing on recent advances.</li> <li>• Explore supervised and unsupervised learning paradigms of machine learning.</li> <li>• To explore Deep learning technique and various feature extraction strategies.</li> </ul>	CO1: Should able to do cost management for various projects. CO2: Should able to understand the meaning of cost management. CO3: Should able to analyze Cost Behavior and Profit Planning. CO4: Understand Quantitative techniques for cost management CO5: Analyze the pricing and apply for various projects.
1188	MTMEPE 302E	Composite Materials	<ul style="list-style-type: none"> <li>• To learn the concept of how to learn patterns and concepts from data without being explicitly programmed in various IOT nodes.</li> <li>• To design and analyse various machine learning algorithms and techniques with a modern outlook focusing on recent advances.</li> <li>• Explore supervised and unsupervised learning paradigms of machine learning.</li> <li>• To explore Deep learning technique and various feature extraction strategies.</li> </ul>	CO1: Understand Definition – Classification and characteristics of Composite materials. CO2: Know about Reinforcements. CO3: Know about manufacturing of Metal Matrix Composites. CO4: Know about manufacturing of Polymer Matrix Composites: CO5: Know about strength and laminates.
1189	MTMEPE 302F	Waste to Energy	<ul style="list-style-type: none"> <li>• To learn the concept of how to learn patterns and concepts from data without being explicitly programmed in various IOT nodes.</li> <li>• To design and analyses various machine learning algorithms and techniques with a modern outlook focusing on recent advances.</li> <li>• Explore supervised and unsupervised learning paradigms of machine learning.</li> <li>• To explore Deep learning technique and various feature extraction strategies.</li> </ul>	CO1: Know about various forms of Energy wastage. CO2: Know about Biomass introduction. CO3: Know about Biomass gasifiers. CO4: Know about Biogas properties. CO5: Know about Biomass combustion.

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S. No.	Course Code	Course Title	Course Objective	Expected Outcome
1190	MTMEPE303	Dissertation-I /Industrial Project	To identification of the problem To use modern research tools/methods. To design and conduct experiments and identify the solution of the problem/s.	CO1: handle research problems and use modern research tools/methods. CO2: analyze and review the existing literature on a research problem. CO3: design and conduct experiments. CO4: write dissertation and technical reports. CO5: publish research papers.
1191	MTMEPE401	Dissertation II	To identification of the problem To use modern research tools/methods. To design and conduct experiments and identify the solution of the problem/s.	CO1: Handle research problems and use modern research tools/methods. CO2: Analyze and review the existing literature on a research problem. CO3: Design and conduct experiments. CO4: Write dissertation and technical reports. CO5: Publish research papers.
1192	MTEEPS101	Advanced Power System Analysis	1. To study various methods of load flow and their advantages and disadvantages 2. To understand how to analyze various types of faults in power system 3. To understand power system security concepts and study the methods to rank the contingencies 4. To understand need of state estimation and study simple algorithms for state estimation 5. To study voltage instability phenomenon	CO1: Calculate voltage phasor at all buses CO2: Study various methods of load flow and their advantages and disadvantages CO3: Rank various contingencies according to their severity in terms of bus voltage and line loading CO4: Study voltage instability phenomenon CO5: Estimate the bus voltage phasor given various quantities viz. power flow, voltages, taps, CB status etc CO6: Understand how to analyze various types of faults in power system
1193	MTEEPS102	Power System Dynamics-I	1. To introduce the basic concepts of power system dynamics. 2. To introduce the dynamic behavior of the system and its effect on the stability of the power system. 3. To cover the modeling of different machines.	CO1: Analyse the modeling of synchronous machine in details CO2: Carry out simulation of power system dynamics using MATLAB-SIMULINK. CO3: Carry out stability analysis with and without power system stabilizer (PSS) CO4: Understand the load modeling in power system CO5: Study the effect of excitation system and voltage stability of the power system. CO6: Explain the multi machine stability and asynchronous operation.

## Course Outcomes

S. No.	Course Code	Course Title	Course Objective	Expected Outcome
1194	MTEEPS103A	Renewable Energy System	<ol style="list-style-type: none"> <li>1. To expose the students to real time working principles of distributed generation systems with renewable energy sources.</li> <li>2. To gain understanding of sizing, economics, dynamics of off-grid and grid-connected renewable energy based distributed generation schemes.</li> </ol>	<p>CO1: Understand the renewable sources in distributed generation (DG)</p> <p>CO2: Understand sitting, sizing, optimal placement &amp; grid integration of DG sources in distribution and transmission systems.</p> <p>CO3: Explain the economics, reliability aspects of DGs.</p> <p>CO4: Apply modeling techniques to micro grid with multiple DGs and study the transients.</p> <p>CO5: Analyze the steady state and dynamic performance in control of DG systems.</p>
1195	MTEEPS103B	Smart Grids	<ol style="list-style-type: none"> <li>1. To understand concept of smart grid and its advantages over conventional grid</li> <li>2. To know smart metering technique</li> <li>3. To learn wide area measurement techniques</li> <li>4. To understand the problems associated with integration of distributed generation and its solution through smart grid</li> </ol>	<p>CO1: To study the power quality problems associated with integration of renewable energy sources in smart grid.</p> <p>CO2: Formulate solutions in the areas of smart substations, distributed generation and wide area measurements.</p> <p>CO3: Come up with smart grid solutions using modern communication technologies</p> <p>CO4: To apply smart metering concepts to industrial and commercial installations.</p> <p>CO5: Appreciate the difference between smart grid &amp; conventional grid.</p>
1196	MTEEPS103C	High Power Converters	<ol style="list-style-type: none"> <li>1. To introduce the students to different type of Power Electronics converters.</li> <li>2. To know about various design aspects as well as protection schemes of the converters.</li> </ol>	<p>CO1: Understand the characteristics of different semiconductor devices and their applications in different converters.</p> <p>CO2: Gain knowledge about different AC voltage controllers and their control.</p> <p>CO3: Design gate drive circuits and protective circuits for semiconductor devices</p> <p>CO4: Know about the requirement and working phenomenon of power conditioners and UPS.</p> <p>CO5: Know about different topologies of multi-level inverters and also PWM techniques used in VSI and CSI.</p>

## Course Outcomes

S. No.	Course Code	Course Title	Course Objective	Expected Outcome
1197	MTEEPS103D	Wind and Solar Systems	<ol style="list-style-type: none"> <li>1. To appreciate the importance of energy growth of the power generation from the renewable energy sources and participates in solving these problems.</li> <li>2. To demonstrate the knowledge of the physics of wind power and solar power generation and all associated issues so as to solve practical problems.</li> <li>3. To understand the factors involved in installation and commissioning of a Solar or Wind plant.</li> <li>4. To learn the dynamics involved when interconnected with power system grid.</li> </ol>	<p>CO1: Understand the development and current status of wind and solar system.</p> <p>CO2: Know the characteristics of wind power generation and its integration with transmission and distribution network.</p> <p>CO3: Know about Solar power systems and its applications.</p> <p>CO4: PV power generation, Energy Storage device. Designing the solar systems for small installations.</p> <p>CO5: Impacts on power systems dynamics, power systems interconnection.</p>
1198	MTEEPS104A	Electrical Power Distribution System	<ol style="list-style-type: none"> <li>1. To familiarize students with rudimentary concepts and design of modern power distribution system</li> <li>2. To adopt Technologies for automation of distributed system.</li> <li>3. To understand maintenance and protection of distribution system.</li> </ol>	<p>CO1: Understand Introduction to SCADA and its application</p> <p>CO2: Know the AI techniques applied to Distribution Automation.</p> <p>CO3: To find the optimal placement of switching devices in distribution network to minimize losses and improve the performance</p> <p>CO4: Provides an idea regarding distribution management system, interconnected power system and power system automation.</p> <p>CO5: To study different aspects of distribution system maintenance and energy management.</p>

## Course Outcomes

S. No.	Course Code	Course Title	Course Objective	Expected Outcome
1199	MTEEPS104B	Mathematical Methods for Power Engineering	<ol style="list-style-type: none"> <li>1. To understand the relevance of mathematical methods to solve engineering problems.</li> <li>2. To understand how to apply these methods for a given engineering problem.</li> </ol>	<p>CO1: Knowledge about vector spaces, linear transformation, eigenvalues and eigenvectors of linear operators.</p> <p>CO2: To learn about linear programming problems and understanding the simplex method for solving linear programming problems in various fields of science and technology</p> <p>CO3: Acquire knowledge about nonlinear programming and various techniques used for solving constrained and unconstrained nonlinear programming problems</p> <p>CO4: Understanding the concept of random variables, functions of random variable and their probability distribution</p> <p>CO5: Understand stochastic processes and their classification.</p>
1200	MTEEPS104C	Pulse Width Modulation for PE Converters	<ol style="list-style-type: none"> <li>1. To understand Necessity and Importance of PWM techniques</li> <li>2. To understand Implementation of PWM controllers</li> </ol>	<p>CO1: To study development in modulation scheme and its application for unbalanced voltage system.</p> <p>CO2: To provide the students a deep insight in to the power electronics converters and its modulation techniques.</p> <p>CO3: To study the necessity of providing minimum pulse width and its effect.</p> <p>CO4: To study development in modulation scheme and its application for multilevel inverters.</p> <p>CO5: To study Implementation of modulation controller.</p>
1201	MTEEPS104D	Electric and Hybrid Vehicles	<ol style="list-style-type: none"> <li>1. To understand upcoming technology of hybrid system</li> <li>2. To understand different aspects of drives application</li> <li>3. To Learn about the electric Traction</li> </ol>	<p>CO1: Learn the basic concepts, mathematical models and social/environmental importance of hybrid and electric vehicles</p> <p>CO2: Learn about energy management in hybrid and electric vehicle</p> <p>CO3: Understand and learn about different drive applications</p> <p>CO4: Learn fundamental concepts of hybrid tractions, hybrid drive-train topologies and hybrid drive-train topologies.</p> <p>CO5: Learn electric machine and the internal combustion engine (ICE)</p>

## Course Outcomes

S. No.	Course Code	Course Title	Course Objective	Expected Outcome
1202	MTEEPS105	Research Methodology and IPR	<ol style="list-style-type: none"> <li>1. To understand research problem formulation.</li> <li>2. To analyze research related information</li> <li>3. To follow research ethics</li> <li>4. To understand that today's world is controlled by Computer, Information Technology, but tomorrow world will be ruled by ideas, concept, and creativity.</li> </ol>	<p>CO1: Understand research problem formulation. Analyze research related information &amp; Follow research ethics.</p> <p>CO2: Understand that today's world is controlled by Computer, Information Technology, but tomorrow world will be ruled by ideas, concept, and creativity.</p> <p>CO3: Understanding that when IPR would take such important place in growth of individuals &amp; nation, it is needless to emphasize the need of information about Intellectual Property Right to be promoted among students in general &amp; engineering in particular.</p> <p>CO4: Understand that IPR protection provides an incentive to inventors for further research work and investment in R &amp; D, which leads to creation of new and better products, and in turn brings about, economic growth and social benefits.</p>
1203	MTEEPS106	Audit Course - 1 AUDIT 1 and 2 : English for Research Paper Writing AUDIT 1 and 2: Disaster Management AUDIT 1 and 2 : Sanskrit For Technical Knowledge AUDIT 1 and 2 : Value Education AUDIT 1 and 2 : Constitution Of India AUDIT 1 and 2 : Pedagogy Studies AUDIT 1 and 2: Stress Management by Yoga AUDIT 1 and 2: Personality Development through Life Enlightenment Skills	<ul style="list-style-type: none"> <li>• To learn to achieve the highest goal happily</li> <li>• To become a person with stable mind, pleasing personality and determination</li> <li>• To awaken wisdom in students</li> </ul>	<p>CO1: Knowledge of Neetisatakam - Holistic development of personality.</p> <p>CO2: Approach to day to day work and duties.</p> <p>CO3: Understanding the Theory of Statements of basic knowledge.</p> <p>CO4: Understanding the Personality of Role model. Shrimad Bhagwad Geeta.</p> <p>CO5: Study of Personality Development through Life Enlightenment Skills.</p>

## Course Outcomes

S. No.	Course Code	Course Title	Course Objective	Expected Outcome
1204	MTEEPS107	Power System Steady State Analysis Lab	<ol style="list-style-type: none"> <li>1. To learn basic principles of simulation, modeling of power system for study of various phenomena using software/hardware</li> <li>2. To learn basic principles of simulation, modeling of control system for study of various phenomena using software/hardware</li> <li>3. To model load flow problems and find various solutions to it.</li> </ol>	<p>CO1: Do the simulation</p> <p>CO2: Do modeling of power system.</p> <p>CO3: Do modeling of control system, and power electronics devices</p> <p>CO4: Apply the lab knowledge for their thesis work as well.</p> <p>CO5: Load Forecasting and Unit Commitment</p>
1205	MTEEPS108	Renewable Energy Lab	<ol style="list-style-type: none"> <li>1. To learn made conversant with the non conventional energy systems such as solar energy and its modeling.</li> <li>2. To learn made conversant with the non conventional energy systems such as wind energy and its modeling using software/hardware</li> <li>3. To Test the Capabilities of the Hydrogen Fuel Cells and Capacitors.</li> </ol>	<p>CO1: Build a Wind Farm</p> <p>CO2: Test the Capabilities of the Hydrogen Fuel Cells and Capacitors</p> <p>CO3: Modeling of solar plant and test its efficiency.</p> <p>CO4: Know the effect of loads on solar power plant.</p> <p>CO5: Test the Capabilities of Solar Panels and Wind Turbines.</p>
1206	MTEEPS201	Digital Protection of Power System	<ol style="list-style-type: none"> <li>1. To study of numerical relays</li> <li>2. To develop mathematical approach towards protection</li> <li>3. To study of algorithms for numerical protection</li> </ol>	<p>CO1: Learn the basic requirements of digital protection</p> <p>CO2: Apply Mathematical approach towards protection</p> <p>CO3: Learn the importance of Digital Relays.</p> <p>CO4: Learn numerical protection on various power system elements.</p> <p>CO5: Learn to develop various Protection algorithms</p>
1207	MTEEPS202	Power System Dynamics-II	<ol style="list-style-type: none"> <li>1. To study of power system dynamics</li> <li>2. To understand interpretation of power system dynamic phenomena</li> <li>3. To study of various forms of stability</li> </ol>	<p>CO1: analyze the rotor angle stability and design techniques to improve the stability of the system.</p> <p>CO2: Study the effect of excitation system and voltage stability of the power system.</p> <p>CO3: explain the multi machine stability and asynchronous operation.</p> <p>CO4: Understand the modeling of automatic generation control of single area and multiarea system and sub</p> <p>CO5: Analyze the small signal stability of the power system</p>

## Course Outcomes

S. No.	Course Code	Course Title	Course Objective	Expected Outcome
1208	MTEEPS203A	Restructured Power Systems	<ol style="list-style-type: none"> <li>1. To understand what is meant by restructuring of the electricity market.</li> <li>2. To understand the need behind requirement for deregulation of the electricity market.</li> <li>3. To understand the money, power &amp; information flow in a deregulated power system.</li> </ol>	<p>CO1: Describe the working and various other aspects of restructured power system.</p> <p>CO2: Discuss the recent trends and applications in restructured markets.</p> <p>CO3: Classify different market mechanisms and summarize the role of various entities in the market.</p> <p>CO4: Identify the need of regulation and deregulation.</p> <p>CO5: Describe the Technical and Non-technical issues in Deregulated Power Industry.</p>
1209	MTEEPS203B	Advanced Digital Signal Processing	<ol style="list-style-type: none"> <li>1. To understand the difference between discrete-time and continuous-time signals</li> <li>2. To understand and apply Discrete Fourier Transforms (DFT)</li> </ol>	<p>CO1: Analyze and implement power spectrum estimation techniques.</p> <p>CO2: Analyze, design and implement digital systems using the DFT and (FFT).</p> <p>CO3: Design and analyze frequency-selective digital filters using various filtering methods.</p> <p>CO4: Learn the Principles of adaptive filtering and implement algorithms of adaptation</p> <p>CO5: Acquire the basics of multi rate digital signal processing.</p>
1210	MTEEPS203C	Dynamics of Electrical Machines	<ol style="list-style-type: none"> <li>1. To learn about the performance characteristics of machine</li> <li>2. To understand the dynamics of the machine</li> <li>3. To understand how to determine stability of machine</li> <li>4. To learn the synchronous machine</li> </ol>	<p>CO1: Study the concept of synchronous machine system.</p> <p>CO2: Study the machine dynamics and its stability analysis.</p> <p>CO3: Understand the transient study using transformed equation and to study the DC generator and DC motor system</p> <p>CO4: Study the torque dynamics of primitive modeled DC machine, induction motor dynamics, transformed equation and various reference frame theories of induction motor.</p> <p>CO5: Analyze the concept of synchronous machine and its analysis.</p>

## Course Outcomes

S. No.	Course Code	Course Title	Course Objective	Expected Outcome
1211	MTEEPS203D	Power Apparatus Design	<ol style="list-style-type: none"> <li>1. To study the modeling analysis of rotating machine.</li> <li>2. To understand the electromagnetic energy conversion</li> <li>3. To know about rating of machines.</li> </ol>	<p>CO1: Design Computer Aided Electrical Machine.</p> <p>CO2: Model and design all types of rotating machines including special machines.</p> <p>CO3: Model all rotating machines under both transient and steady state conditions with the dimensions and material used.</p> <p>CO4: Apply the knowledge of the electrical apparatus in industry oriented applications.</p> <p>CO5: Analyze and design a transformer with general considerations such as emf per turn, choice of flux density and current density, main dimensions, leakage reactance</p>
1212	MTEEPS204A	Advanced Micro-Controller Based Systems	<ol style="list-style-type: none"> <li>1. To understand the architecture of advance microcontrollers</li> <li>2. To understand the applications of these controllers</li> <li>3. To get some introduction to FPGA</li> </ol>	<p>CO1: Program a microcontroller or microprocessor using assembly language.</p> <p>CO2: Configure and use different peripherals in a digital system</p> <p>CO3: Understand the operation of different microcontrollers as well as DSP based systems</p> <p>CO4: Understand the architecture and organization of a microcontroller or microprocessor</p> <p>CO5: Compile and debug a program and generate an executable file and use it</p>
1213	MTEEPS204B	SCADA System and Applications	<ol style="list-style-type: none"> <li>1. To understand what is meant by SCADA and its functions</li> <li>2. To know SCADA communication</li> <li>3. To get an insight into its application</li> </ol>	<p>CO1: Analyze Various architectures of SCADA systems with their advantages and limitations</p> <p>CO2: Understand Basic knowledge on supervisory control and their applications</p> <p>CO3: Knowledge on applications of SCADA systems on distribution sector and in various industries.</p> <p>CO4: Overview on single unified standard architecture IEC 61850</p> <p>CO5: Learn about remote terminal units, PLCs, intelligent electronic devices, HMI systems, SCADA server.</p>

## Course Outcomes

S. No.	Course Code	Course Title	Course Objective	Expected Outcome
1214	MTEEPS204C	Power Quality	<ol style="list-style-type: none"> <li>1. To understand the different power quality issues to be addressed</li> <li>2. To understand the recommended practices by various standard bodies like IEEE, IEC, etc on voltage &amp; frequency, harmonics</li> <li>3. To understand the STATIC VAR Compensators</li> </ol>	<p>CO1: Model power systems under non-sinusoidal condition for transient studies.</p> <p>CO2: Design model reference adaptive systems for power quality problems</p> <p>CO3: Understand importance of power quality with power quality issues &amp; standards</p> <p>CO4: Understand and analyze the solutions to mitigate power quality problems</p> <p>CO5: Design variable structure control for power quality systems</p>
1215	MTEEPS204D	AI Techniques	<ol style="list-style-type: none"> <li>1. To understand the fuzzy logic, ANN</li> <li>2. To understand the GA &amp; EP</li> </ol>	<p>CO1: Explore different techniques to solve artificial intelligence problems by searching.</p> <p>CO2: Envisage the need of quantifying uncertainty and probabilistic reasoning.</p> <p>CO3: Demonstrate the fundamental principles of intelligent systems.</p> <p>CO4: Conceive the concepts of knowledge representation and inference mechanism.</p> <p>CO5: Apply the fuzzy reasoning rules and knowledge representation in real life problem solving.</p>

## Course Outcomes

S. No.	Course Code	Course Title	Course Objective	Expected Outcome
1216	MTEEPS205	Audit Course - 2 AUDIT 1 and 2 : English for Research Paper Writing AUDIT 1 and 2: Disaster Management AUDIT 1 and 2 : Sanskrit For Technical Knowledge AUDIT 1 and 2 : Value Education AUDIT 1 and 2 : Constitution Of India AUDIT 1 and 2 : Pedagogy Studies AUDIT 1 and 2: Stress Management by Yoga AUDIT 1 and 2: Personality Development through Life Enlightenment Skills	<ul style="list-style-type: none"> <li>• To achieve overall health of body and mind</li> <li>• To overcome stress</li> </ul>	CO1: Knowledge of Eight parts of yog ( Ashtanga ). CO2: Understanding the Do's and Don't's in life. CO3: Knowledge and application of Ahinsa, satya, astheya, bramhacharya, aparigraha, Shaucha, santosh, tapa, swadhyay, ishwarpranidhan. CO4: Pracicing Asan and Pranayam.. CO5: Regularization of breathing techniques and its effects.
1217	MTEEPS206	Power System Protection Lab	1. To understand the modelling of various relays using software. 2. To know about various protective schemes.	CO1: Introduction to Power System Protection. CO2: Model Differential Relay using MATLAB CO3: Demonstrate the fundamental principles of intelligent systems. CO4: protective schemes for various equipments of power system. CO5: Know about various relays and its applications.
1218	MTEEPS207	Application to Power System Lab	1. To train the students in solving and analyzing the advanced power system problems and research oriented problems using various hardware/software procured by various projects.	CO1: Solve power system problems using MATLAB. CO2: Perform simulation studies using software packages CO3: Use of Real Time Data and Instruments for analyzing the performance of Power Systems. CO4: Discuss Load sharing in power systems. CO5: Apply Load-frequency dynamics of single area power system.

## Course Outcomes

S. No.	Course Code	Course Title	Course Objective	Expected Outcome
1219	MTEEPS208	Mini Project with Seminar	<ul style="list-style-type: none"> <li>• To identification of the problem</li> <li>• To use modern research tools/methods.</li> <li>• To design and conduct experiments and identify the solution of the problem/s.</li> </ul>	<p>CO1: Enable the Students to undertake short research project under the direction of guide</p> <p>CO2: impart skills in preparing detailed report describing the project and results.</p> <p>CO3: enable the students to undertake fabrication work of new experimental set up/devices</p> <p>CO4: Effectively communicate by making an oral presentation before an evaluation committee</p>
1220	MTEEPS301A	Power System Transients	<ol style="list-style-type: none"> <li>1. To learn the reasons for occurrence of transients in a power system</li> <li>2. To understand the change in parameters like voltage &amp; frequency during transients</li> <li>3. To know about the lightning phenomenon and its effect on power system</li> </ol>	<p>CO1: Describe the formation and characteristics of travelling waves in transmission line</p> <p>CO2: Model power apparatus under transient conditions.</p> <p>CO3: Explain the various sources of electromagnetic transient.</p> <p>CO4: Apply insulation co-ordination principles.</p> <p>CO5: Understand Principle of digital computation.</p>
1221	MTEEPS301B	FACTS and Custom Power Devices	<ol style="list-style-type: none"> <li>1. To learn the active and reactive power flow control in power system</li> <li>2. To understand the need for static compensators</li> <li>3. To develop the different control strategies used for compensation</li> </ol>	<p>CO1: Describe the Reactive power flow control in Power Systems</p> <p>CO2: Describe about various compensation methods.</p> <p>CO3: Power quality operation and control methods.</p> <p>CO4: Know about various FACTS devices and its applications.</p> <p>CO5: Know about SSR and its damping Unified Power Flow Controller.</p>
1222	MTEEPS301C	Industrial Load Modeling and Control	<ol style="list-style-type: none"> <li>1. To understand the energy demand scenario</li> <li>2. To understand the modeling of load and its ease to study load demand industrially</li> <li>3. To know Electricity pricing models</li> <li>4. To study Reactive power management in Industries</li> </ol>	<p>CO1: Present scenario of electrical energy.</p> <p>CO2: Know about electric energy pricing methods.</p> <p>CO3: Selection of Schemes Optimal Operating Strategies</p> <p>CO4: Know about Energy banking, Industrial Cogeneration.</p> <p>CO5: Optimal operation of load distribution.</p>

## Course Outcomes

S. No.	Course Code	Course Title	Course Objective	Expected Outcome
1223	MTEEPS301D	Dynamics of Linear Systems	<ol style="list-style-type: none"> <li>1. To understand the linear system and its functions</li> <li>2. To understand the stability analysis of linear systems and implement the same in MATLAB</li> </ol>	<p>CO1: Know State variable representations of systems.</p> <p>CO2: Analyze linear time varying systems.</p> <p>CO3: State space representation of discrete systems and provide solutions to it.</p> <p>CO4: Know about State feedback of linear discrete time systems, design of observers with MATLAB Exercises.</p> <p>CO5: Apply Ackerman's Formula - stabilisation by output feedback.</p>
1224	MTEEPS302A	Business Analytics	<ol style="list-style-type: none"> <li>1. To understand the role of business analytics within an organization.</li> <li>2. To analyze data using statistical and data mining techniques and understand relationships</li> <li>3. To understand the underlying business processes of an organization.</li> <li>4. To gain an understanding of how managers use business analytics to formulate and solve business problems and to support managerial decision making.</li> <li>5. To become familiar with processes needed to develop, report, and analyze business data.</li> <li>6. To use decision-making tools/Operations research techniques.</li> <li>7. To manage business process using analytical and management tools. Analyze and solve problems from different industries such as manufacturing, service, retail, software, banking and finance, sports, pharmaceutical, aerospace etc.</li> </ol>	<p>CO1: Understand the role of business analytics within an organization.</p> <p>CO2: Analyze data using statistical and data mining techniques and understand relationships between the underlying business processes of an organization.</p> <p>CO3: To become familiar with processes needed to develop, report, and analyze business data.</p> <p>CO4: Analyze and solve problems from different industries such as manufacturing, service, retail, software, banking and finance, sports, pharmaceutical, aerospace etc.</p> <p>CO5: Use decision-making tools/Operations research techniques.</p>

## Course Outcomes

S. No.	Course Code	Course Title	Course Objective	Expected Outcome
1225	MTEEPS302B	Industrial Safety	1. To know about Industrial safety 2. To know about fundamental concepts of maintenance engineering. 3. To know about preventive measures to be taken.	CO1: Understand the role industrial safety. CO2: Understand fundamentals of maintenance engineering. CO3: Learn different methods of Wearing and Corrosion and their prevention. CO4: Trace out the faults occurring in various electrical systems. CO5: Know about Periodic and preventive maintenance of various systems.
1226	MTEEPS302C	Operations Research	1. To know about the optimization Techniques. 2. To know about Competitive Models. 3. To learn about Formulation of a LPP.	CO1: Should able to carry out sensitivity analysis. CO2: Should able to model the real world problem and simulate it. CO3: Should able to apply the dynamic programming to solve problems of discreet and continuous variables. CO4: Should able to apply the concept of non-linear programming CO5: Should be able to formulate optimization techniques.
1227	MTEEPS302D	Cost Management of Engineering Projects	1. To know about Cost concepts in decision-making 2. To know about Project making. 3. To know about Cost Behavior and Profit Planning Marginal Costing	CO1: Should able to do cost management for various projects. CO2: Should able to understand the meaning of cost management. CO3: Should able to analyze Cost Behavior and Profit Planning. CO4: Understand Quantitative techniques for cost management CO5: Analyze the pricing and apply for various projects.
1228	MTEEPS302E	Composite Materials	1. To know about introduction to composite materials. 2. To know about reinforcements. 3. To know about manufacturing process of composite materials.	CO1: Understand Definition – Classification and characteristics of Composite materials. CO2: Know about Reinforcements. CO3: Know about manufacturing of Metal Matrix Composites. CO4: Know about manufacturing of Polymer Matrix Composites: CO5: Know about strength and laminates.

## Course Outcomes

S. No.	Course Code	Course Title	Course Objective	Expected Outcome
1229	MTEEPS302F	Waste to Energy	1. To know about Energy waste introduction. 2. To know about Biomass process. 3. To know about various types of biomass plants and gasifiers.	CO1: Know about various forms of Energy wastage. CO2: Know about Biomass introduction. CO3: Know about Biomass gasifiers. CO4: Know about Biogas properties. CO5: Know about Biomass combustion.
1230	MTEEPS303	Dissertation-I /Industrial Project	To identification of the problem To use modern research tools/methods. To design and conduct experiments and identify the solution of the problem/s.	CO1: handle research problems and use modern research tools/methods. CO2: analyze and review the existing literature on a research problem. CO3: design and conduct experiments. CO4: write dissertation and technical reports. CO5: publish research papers.
1231	MTEEPS401	Dissertation II	To identification of the problem To use modern research tools/methods. To design and conduct experiments and identify the solution of the problem/s.	CO1: handle research problems and use modern research tools/methods. CO2: analyze and review the existing literature on a research problem. CO3: design and conduct experiments. CO4: write dissertation and technical reports. CO5: publish research papers.
1232	LLM 101	Research Methods and Legal Writing	<ul style="list-style-type: none"> <li>● To acquaint the student of law with the statistical method of social science research and Legal writing.</li> <li>● To provide the knowledge of the technique of selection, collection and interpretation of primary and secondary data in socio legal research.</li> <li>● To develop a scientific approach to socio legal problems.</li> </ul>	CO1 Understand the concept of Legal Research, Source & Scope CO2 Understand and apply research designing tools, techniques and methodology in their respective research. CO3 Acquire the knowledge regarding research tools procedure and data processing. CO4 Apply and analyze writing skills in legal context. CO5 Summarize, Interpret and classify the whole subject matter

## Course Outcomes

S. No.	Course Code	Course Title	Course Objective	Expected Outcome
1233	LLM 102	Comparative Public Law	<ul style="list-style-type: none"> <li>● To provide an overview on analytical and theoretical scrutiny of Public Administrative Law and Constitutional Law.</li> <li>● To critically analyze the new constitutional movements which are changing the boundaries of constitutionalism and constitutional system.</li> </ul>	CO1 Understand the Rule of Law & Apply comparative law to complex problems/ issues. CO2 Improve and enhance their own legal system through comparative law CO3 Design sustain , concise and cohesive written arguments for a legal and professional audience CO4 Understand the theoretical and practical issues related to complaints and its Legal solutions. CO5 Analyze the impact of comparative law in the context of social and cultural diversity in global perspectives.
1234	LLM 103	Law and Justice in a Globalizing World	<ul style="list-style-type: none"> <li>● To understand and solicit solutions to pressing problems in the domain of global justice.</li> <li>● To critically evaluate the liberal, republican, and discursive democratic attempts to ameliorate, prevailing instances of injustice in the world.</li> </ul>	CO1 Understand the concept of globalization through various dimension in legal context. CO2 Calculate of poverty & Review Health, Practical National practices CO3 Solving of MNC cases. Understanding for using of judicial institution CO4 Recognizing of social justice & understand of education CO5 Understand of “global justice”, and immerses them in specific case studies of national and international legal systems
1235	LLM 104- A	Company Law	<ul style="list-style-type: none"> <li>● To acquaint the students with the formation, management and other activities of the companies, that have taken place in the corporate sector.</li> <li>● To impart the knowledge of the corporate management, control, possible abuses, the remedies and government regulation of corporate business and winding up of companies.</li> </ul>	CO1 Understand comprehensive and accurate knowledge of those areas of company law identified in the indicative syllabus and form a critical judgment on areas of controversy within the topics studied. CO2 Understanding of social and economic policy considerations. CO3 Evaluate competing arguments or solutions and present well supported conclusions both orally and in writing CO4 Study primary and secondary sources of company law, with minimal staff guidance; critically analyze, interpret, evaluate and synthesize information from a variety of sources. CO5 Identify sources for research and further develops a strategy for research using standard and electronic research tools

## Course Outcomes

S. No.	Course Code	Course Title	Course Objective	Expected Outcome
1236	LLM 105- A	Intellectual Property Law	<ul style="list-style-type: none"> <li>● To acquaint the students with basic components of intellectual property rights with special reference to Indian law and practice.</li> <li>● To disseminate the knowledge in Copyrights, Trademarks and Patent for the creation of intellectual property rights.</li> </ul>	CO1 Understand the concept of intellectual property rights CO2 Develop procedural knowledge to Legal System and solving the problem relating to copyrights. CO3 Understanding & Applicability of Patent procedure CO4 Gain knowledge required for running of business through goodwill and symbols by using trademarks. CO5 Learn the procedure for establishing Legal Consultancy and service provider.
1237	LLM 104- B	White Collar Crimes	<ul style="list-style-type: none"> <li>● To focus on the "Criminality of the "Privileged classes" as the definition of "privileged classes" in a society like India nearly includes wielders of all forms of state and social (including religious) power.</li> <li>● To focus on the relation between privilege power and deviant behavior. The traditional approaches which highlight "white-collar offences", "socio-economic offences" or "crimes of the powerful" deal mainly with the deviance of the economically resourceful.</li> </ul>	CO1 Understand the Concept & Diagram of white-collar crime, understand to socio-economic offences, Able to resolve these cases CO2 Find the organizational crime & Unethical practices CO3 Understanding & Relationships between accountable authority CO4 Justifying decisions national and global level problem CO5 Implement & Control of crime through Laws
1238	LLM 105- B	Criminal Justice and Human Rights	<ul style="list-style-type: none"> <li>● To focus on the concept of Criminal Justice and Human Rights which has been an important area for study and is still developing fast particularly in the international arena.</li> <li>● To focus on criminal justice systems comply with human rights requirements in order to ensure implementation and enforcement of the criminal law by the state, through investigation, trial and punishment and respect the civil liberties of citizens accused of crime.</li> </ul>	CO1 Understand the concept & enforcement of human rights CO2 Gain awareness of human rights through Legal System CO3 Analyze & Understand the criminal justice administration CO4 Identify the area through resolving the problem of Human Rights Implementations CO5 Apply human right laws through investigation, trial and punishment

## Course Outcomes

S. No.	Course Code	Course Title	Course Objective	Expected Outcome
1239	LLM 201- A	International Trade Law	<ul style="list-style-type: none"> <li>● To introduce the subject to the students with special reference to India's role and relevance in the multilateral trading represented by the WTO.</li> <li>● To deal with the concepts of IMF, World Bank, ITO, GATT, TRIPS as well as the relationship between the international legal system and domestic systems</li> </ul>	CO1 Understand the evolution and concept of the International Trade & structures of International Trade Organization CO2 Understand & analyze the scope of GATT & various types of agreements CO3 Describe the measures of Anti-Dumping, Trade Related aspects of Intellectual Property Right CO4 Apply the Mechanism of dispute settlement, consultation at International Level CO5 Recognize the function of World Trade Organization
1240	LLM 202- A	Competition Law	<ul style="list-style-type: none"> <li>● To create an overview about Competition law in India, examine the anticompetitive practices in India and abroad.</li> <li>● To focus on the concept of abuse of dominant practices in India and abroad, examines the combinations taking place in India and outside India.</li> </ul>	CO1 Understand the goals of competition law, Concept & policy CO2 Understand, explain and apply the two main prohibitions of Competition Law; the prohibitions of anti-competitive agreements and abuse of a dominant position CO3 Understand and explain the rules on enforcement and sanctions in Competition Law. CO4 Justify the procedure of Tribunal CO5 Understand the concept of 'goods' and 'services' in abundance of acceptable quality at affordable price
1241	LLM 203- A	Laws on Securities and Financial Markets	<ul style="list-style-type: none"> <li>● To make students understand a market for financial investments which are direct and indirect claims to capital and it embraces all forms of lending and borrowing.</li> <li>● To acquaint with the knowledge and understanding of securities laws and regulatory framework of Financial Markets.</li> </ul>	CO1 Understand the characteristics of different financial assets such as money market instruments, bonds, and stocks, and its buying and selling mechanism in financial market. CO2 Understand the Scope & benefit of diversification of holding a portfolio of assets, and the important role played by the market portfolio CO3 Apply different valuation models to evaluate fixed income securities, stocks, and to use different derivative securities in order to manage their investment risk CO4 Review & explain the concept of Non-Banking Financial Institutions CO5 Understand the concept of securities laws and regulatory framework of Financial Markets

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S. No.	Course Code	Course Title	Course Objective	Expected Outcome
1242	LLM 204- A	Banking and Insurance Law	<ul style="list-style-type: none"> <li>● To acquaint the students with the conceptual and operational parameters of banking law and insurance law.</li> <li>● To focus on judicial interpretation and the new and emerging dimensions of both the insurance as well as banking sectors.</li> </ul>	CO1 Understand the concept & basic information in the field of Banking and Insurance Sector. CO2 & its comparison to CoUnderstand the Organization of Commercial Banks. CO3 about universality of social rights, social justice, quality and cultural values, protection of environment through Understand, occupational health and safety insurance. CO4 Describe the nature, scope & utility of public Liability CO5 Understand the conceptual and operational parameters of banking law and insurance law.
1243	LLM 205- A	Dissertation including viva-voce	<ul style="list-style-type: none"> <li>● Analyze the foundational principles of their chosen thesis topic in law, undertake legal research with primary and secondary materials, and evaluate legal information.</li> <li>● Apply the law to complex issues, and critique the operation of the law from a policy perspective, individually.</li> <li>● Structure and sustain concise and cohesive written arguments for a legal audience.</li> <li>● Conduct and analyze legal research, and write, individually.</li> <li>● Analyze the impact of law from policy perspectives, and in the context of social and cultural diversity.</li> <li>● Reflect on their abilities to effectively undertake individual work.</li> </ul>	CO1 Identify key research questions within the field of demography on which you will carry out independent research CO2 Manage the time effectively whilst working on independent research CO3 Demonstrate appropriate referencing and develop skills in other aspects of academic writing CO4 Demonstrate knowledge and understanding of report writing CO5 Apply the demographic/statistical research which has been taught in the training programme for designing an appropriate research strategy and research methodology to carry out the research

## Course Outcomes

S. No.	Course Code	Course Title	Course Objective	Expected Outcome
1244	LLM 201- B	Victimology	<ul style="list-style-type: none"> <li>● To discuss the various reasons for crime, victimization, criminal justice, treatment and compensation of criminals and victims in the various laws.</li> </ul>	CO1 Understand the concept, policies & emerging trends of Victimology CO2 Evaluate & analyze various theories of Victimology CO3 Understand skill development & accountability of justice delivery CO4 Understand the scheme of compensation under various Laws CO5 Apply treatment and compensation of criminals and victims in the various laws.
1245	LLM 202- B	Sentences and Sentencing	<ul style="list-style-type: none"> <li>● To focus on specialist understanding of criminal policies including theories of punishment, their supposed philosophical and sociological justifications and to solve the problem of discretion in the sentencing experience of the 'developing' societies.</li> <li>● To deal with capital punishment and imprisonment as methods of preventing and control of crime.</li> </ul>	CO1 Understand the concept & various forms of punishment . CO2 Evaluate the utility of different sentencing tools in transnational organized crime cases. CO3 Assess the arguments on balancing the public interests in punishing and reintegrating offenders and confiscating assets in transnational organized crime cases. CO4 Apply & Assess the rationale for different sanctions in organized crime cases CO5 Understand the methods of preventing and control of crime
1246	LLM 203- B	Criminology and Criminal Justice Administration	<ul style="list-style-type: none"> <li>● To acquaint students with the recent development made by sociology and psychiatry in understanding human behavior, particularly, deviant behavior.</li> <li>● To give emphasis on understanding the weak and strong points of the existing system in order to determine whether it can meet the challenge and carry new burdens.</li> </ul>	CO1 Understand the concept & scope of criminology CO2 Evaluate the various schools of criminology CO3 Apply to theories of criminology for understanding the criminal laws CO4 Understand pretrial procedure to punishment CO5 Understanding the weak and strong points of the Criminal justice system

## Course Outcomes

S. No.	Course Code	Course Title	Course Objective	Expected Outcome
1247	LLM 204- B	Police Law and Administration	<ul style="list-style-type: none"> <li>● To discuss about the administration, function, duties and problems of the Police.</li> <li>● To focus on the general laws governing police and the various reforms done to strengthen them.</li> </ul>	CO1 Acquire the knowledge of Structure of Police force in India CO2 Understand the powers, functions and problem of Police Force in India CO3 Understand different forums of Justice administration in India CO4 Understand police structure & its investigation staff CO5 Analyze the detailing of Administration, Function, duties and problems of police.
1248	LLM 205- B	Dissertation including viva-voce	<ul style="list-style-type: none"> <li>● Analyze the foundational principles of their chosen thesis topic in law, undertake legal research with primary and secondary materials, and evaluate legal information.</li> <li>● Apply the law to complex issues, and critique the operation of the law from a policy perspective, individually.</li> <li>● Structure and sustain concise and cohesive written arguments for a legal audience.</li> <li>● Conduct and analyze legal research, and write, individually.</li> <li>● Analyze the impact of law from policy perspectives, and in the context of social and cultural diversity.</li> <li>● Reflect on their abilities to effectively undertake individual work.</li> </ul>	CO1 Identify key research questions within the field of demography on which you will carry out independent research CO2 Manage the time effectively whilst working on independent research CO3 Demonstrate appropriate referencing and develop skills in other aspects of academic writing. CO4 Demonstrate knowledge and understanding of report writing CO5 Apply the demographic/statistical research training by designing an appropriate research strategy and research methodology to carry out the research