Programme Outcomes (POs) and Course Outcomes (COs) for all Programmes offered by the institution are stated and displayed on website

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COURSE OUTCOMES

	I SEMESTER				
R2017	**HS8151 COMMUNICATIVE ENGLISH**	**L**	**T**	**P**	**C**
		4	**0**	**0**	**4**
CO1	Read articles of a general kind in magazines and newspapers.				
CO2	Participate effectively in informal conversations; introduce themselves and their friends and express opinions in English				
CO3	Comprehend conversations and short talks delivered in English				
CO4	Write short essays of a general kind and personal letters and emails in English.				
R2017	**MA8151 ENGINEERING MATHEMATICS– I**	**L**	**T**	**P**	**C**
		4	**0**	**0**	**4**
CO1	Use both the limit definition and rules of differentiation to differentiate functions.				
CO2	Apply differentiation to solve maxima and minima problems.				
CO3	Evaluate integrals both by using Riemann sums and by using the Fundamental Theorem of				
CO4	Apply integration to compute multiple integrals, area, volume, integrals in polar coordinates, in addition to change of order and change of variables.				
CO5	Evaluate integrals using techniques of integration, such as substitution, partial fractions and integration by parts.				
CO6	Determine convergence/divergence of improper integrals and evaluate convergentim proper integrals.				
CO7	Apply various techniques in solving differential equations.				
R2017	**PH8151 ENGINEERING PHYSICS**	**L**	**T**	**P**	**C**
		3	**0**	**0**	**3**
CO1	The students will gain knowledge on the basics of properties of matter and its applications				
CO2	The students will acquire knowledge on the concepts of waves and optical devices and their applications in fibre optics,				
CO3	The students will have adequate knowledge on the concepts of thermal properties of materials and their applications in expansion joints and heat exchangers,				
CO4	The students will get knowledge on advanced physics concepts of quantum theory and its applications in tunneling microscopes				
CO5	The students will understand the basics of crystals, their structures and different crystal growth techniques.				
R2017	**CY8151 ENGINEERING CHEMISTRY**	**L**	**T**	**P**	**C**
		3	**0**	**0**	**3**
CO1	The knowledge gained on engineering materials, fuels, energy sources and water treatment techniques will facilitate better understanding of engineering processes and applications for further learning.				
R2017	**GE8151 PROBLEM SOLVING AND PYTHON PROGRAMMING**	**L**	**T**	**P**	**C**
		3	**0**	**0**	**3**
CO1	Develop algorithmic solutions to simple computational problems				
CO2	Read, write, execute by hand simple Python programs.				

CO3	Structure simple Python programs for solving problems.
CO4	Decompose a Python program in to functions
CO5	Represent compound data using Python lists, tuples, dictionaries
CO7	Read and write data from/to files in Python Programs.

R2017	**GE8152ENGINEERINGGRAPHICS**	**L**	**T**	**P**	**C**
		2	**0**	**4**	**4**
CO1	Familiarize with the fundamentals and standards of Engineering graphics				
CO2	Perform freeh and sketching of basic geometrical constructions and multiple views of objects.				
CO3	Project orthographic projections of lines and plane surfaces.				
CO4	Draw projections and solids and development of surfaces.				
CO5	Visualize and to project isometric and perspective sections of simple solids.				
R2017	**GE8161PROBLEMSOLVINGANDPYTHONPROGRAMMINGLABORATORY**	**L**	**T**	**P**	**C**
		4	**0**	**0**	**4**
CO1	Write, test, and debug simple Python programs.				
CO2	Implement Python programs with conditionals and loops.				
CO3	Develop Python programs step-wise by defining functions and callingthem.				
CO4	Use Pythonlists, tuples, dictionaries for representing compound data.				
CO5	Read and write data from/to files in Python.				
R2017	**BS8161PHYSICSANDCHEMISTRYLABORATORY**	**L**	**T**	**P**	**C**
		4	**0**	**0**	**4**
CO1	Apply principles of elasticity, optics and thermal properties for engineering applications.				
CO2	The students will be outfitted with hands-on knowledge in the quantitative chemical analysis				

	II SEMESTER				
R2017	**HS8251TECHNICALENGLISH**	**L**	**T**	**P**	**C**
		4	**0**	**0**	**4**
CO1	Read technical texts and write area- specific texts effortlessly.				
CO2	Listen and comprehend lectures and talks in their area of specialisation successfully.				
CO3	Speak appropriately and effectively in varied formal and informal contexts.				
CO4	Write reports and winning job applications.				
R2017	**MA8251ENGINEERINGMATHEMATICS–II**	**L**	**T**	**P**	**C**
		4	**0**	**0**	**4**
CO1	Eigenvalues and eigenvectors, diagonalization of a matrix, Symmetric matrices, Positive definite matrices and similar matrices.				
CO2	Gradient, divergence and curl of a vector point function and related identities.				
CO3	Evaluation of line, surface and volume integrals using Gauss, Stokes and Green‘s theorems and their verification.				
CO4	Analytic functions, conformal mapping and complex integration.				

CO5	Laplace transform and inverse transform of simple functions, properties, various related theorems and application to differential equations with constant coefficients.				
R2017	**PH8252 PHYSICS FOR INFORMATION SCIENCE**	**L**	**T**	**P**	**C**
		4	**0**	**0**	**4**
CO1	Gain knowledge on classical and quantum electron theories, and energy band structuues,				
CO2	Acquire knowledge on basics of semiconductor physics and its applications in various devices,				
CO3	Get knowledge on magnetic properties of materials and their applications in data storage,				
CO4	Have the necessary understanding on the functioning of optical materials for optoelectronics,				
CO5	Understand the basics of quantum structures and their applications in carbon electronics Simplify Boolean functions using Kmap				

R2017	**BE8255 BASIC ELECTRICAL, ELECTRONICS AND MEASUREMENT ENGINEERING**	**L**	**T**	**P**	**C**
		4	**0**	**0**	**4**
CO1	Discuss the essentials of electric circuits and analysis.				
CO2	Discuss the basic operation of electric machines and transformers				
CO3	Introduction of renewable sources and common domestic loads.				
CO4	Introduction to measurement and metering for electric circuits				
R2017	**GE8291 ENVIRONMENTAL SCIENCE AND ENGINEERING**	**L**	**T**	**P**	**C**
		4	**0**	**0**	**4**
CO1	Environmental Pollution or problems cannot be solved by mere laws. Public participation is an important aspect which serves the environmental Protection. One will obtain knowledge on the following after completing the course.				
CO2	Public awareness of environmental is at infant stage.				
CO3	Ignorance and incomplete knowledge has lead to misconceptions				
CO4	Development and improvement in std. of living has lead to serious environmental disasters				
R2017	**CS8251 PROGRAMMING IN C**	**L**	**T**	**P**	**C**
		4	**0**	**0**	**4**
CO1	Develop simple applications in C using basic constructs				
CO2	Design and implement applications using arrays and strings				
CO3	Develop and implement applications in C using functions and pointers.				
CO4	Develop applications in C using structures.				
CO 5	Design applications using sequential and random access file processing				
R2017	**GE8261 ENGINEERING PRACTICES LABORATORY**	**L**	**T**	**P**	**C**
		4	**0**	**0**	**4**
CO1	Fabricate carpentry components and pipe connections including plumbing works.				
CO2	Use welding equipments to join the structures.				
CO3	Carry out the basic machining operations.				

CO4	Make the models using sheet metal works				
CO 5	Illustrate on centrifugal pump, Air conditioner, operations of smithy, foundary and fittings Measure the electrical quantities				
CO 6	Elaborate on the components, gates, soldering practices Carry out basic home electrical works and appliances.				
R2017	**CS8261 C PROGRAMMING LABORATORY**	**L**	**T**	**P**	**C**
		4	**0**	**0**	**4**
CO1	Develop C programs for simple applications making use of basic constructs, arrays and strings				
CO2	Develop C programs involving functions, recursion, pointers, and structures.				
CO3	Design applications using sequential and random access file processing.				

	III SEMESTER				
R2017	**MA8351 DISCRETEMATHEMATICS**				
CO1	Have knowledge of the concepts needed to test the logic of a program.				
CO2	Have an understanding in identifying structures on many levels.				
CO3	Be aware of a class of functions which transform a finite set into another finite set which relates to input and output functions in computer science.				
CO4	Be aware of the counting principles.				
CO5	Be exposed to concepts and properties of algebraic structures such as groups, rings and fields.				
R2017	**CS8351 DIGITAL PRINCIPLES AND SYSTEM DESIGN**	**L**	**T**	**P**	**C**
		4	**0**	**0**	**4**
CO1	Simplify Boolean functions using Kmap				
CO2	Design and Analyze Combinational and Sequential Circuits				
CO3	Implement designs using Programmable Logic Devices				
CO4	Write HDL code for combinational and Sequential Circuits				
R2017	**CS8391 DATA STRUCTURES**	**L**	**T**	**P**	**C**
		3	**0**	**0**	**3**
CO1	Implement abstract data types for linear data structures.				
CO2	Apply the different linear and non-linear data structures to problem solutions.				
CO3	Critically analyze the various sorting algorithm				
R2017	**CS8392 OBJECT ORIENTED PROGRAMMING**	**L**	**T**	**P**	**C**
		3	**0**	**0**	**3**
CO1	Develop Java programs using OOP principles				
CO2	Develop Java programs with the concepts inheritance and interfaces				
CO3	Build Java applications using exceptions and I/O streams				
CO4	Develop Java applications with threads and generics classes				
CO5	Develop interactive Java programs using swings				

R2017	EC8395 COMMUNICATION ENGINEERING	L	T	P	C
		3	0	0	3
CO1	Ability to comprehend and appreciate the significance and role of this course in the				
CO2	Apply analog and digital communication techniques.				
CO3	Use data and pulse communication techniques.				
CO4	Analyze Source and Error control coding.				
R2017	CS8381 DATA STRUCTURES LABORATORY	L	T	P	C
		0	0	4	2
CO1	Write functions to implement linear and non-linear data structure operations				
CO2	Suggest appropriate linear/non-linear data structure operations for solving a given problem				
CO3	Appropriately use the linear/non-linear data structure operations for a given problem				
CO4	Applyappropriatehashfunctionsthatresultinacollisionfreescenariofordatastorage and retrieval				

R2017	CS8383 OBJECT ORIENTED PROGRAMMING LABORATORY	L	T	P	C
		0	0	4	2
CO1	Develop and implement Java programs for simple applications that make use of classes, packages and interfaces.				
CO2	Develop and implement Java programs with array list, exception handling and multithreading.				
CO3	Design applications using file processing, generic programming and event handling.				

R2017	CS8382 DIGITAL SYSTEMS LABORATORY	L	T	P	C
		0	0	4	2
CO1	Implement simplified combinational circuits using basic logic gates				
CO2	Implement combinational circuits using MSI devices				
CO3	Implements equential circuits like registers and counters				
CO4	Simulate combinational and sequential circuits using HDL				

R2017	HS8381 INTER PERSONAL SKILLS / LISTENING & SPEAKING	L	T	P	C
		0	0	2	1
CO1	Listen and respond appropriately.				
CO2	Participate in group discussions				
CO3	Make effective presentations				
CO4	Participate confidently and appropriately in conversations both formal and informal				

IV SEMESTER					
R2017	**MA8402 PROBABILITY AND QUEUING THEORY**	**L**	**T**	**P**	**C**
		4	**0**	**0**	**4**
CO1	Understand the fundamental knowledge of the concepts of probability and have knowledge of standard distributions which can describe real life phenomenon				
CO2	Understand the basic concepts of one and two dimensional random variables and apply in engineering applications.				
CO3	Apply the concept to f random processes in engineering disciplines.				
CO4	Acquire skills in analyzing queueing models.				
CO5	Understand and characterize phenomenon which evolve with respect to time in a probabilistic manner				
R2017	**CS8491 COMPUTER ARCHITECTURE**	**L**	**T**	**P**	**C**
		3	**0**	**0**	**3**
CO1	Understand the basics structure of computers, operations and instructions.				
CO2	Design arithmetic and logic unit.				
CO3	Understand pipe lined execution and design control unit.				
CO4	Understand parallel processing architectures.				
CO5	Understand the various memory systems and I/O communication.				

R2017	**CS8492 DATABASE MANAGEMENT SYSTEMS**	**L**	**T**	**P**	**C**
		3	**0**	**0**	**3**
CO1	Classify the modern and futuristic database applications based on size and complexity				
CO2	Map ER model to Relational model to perform database design effectively				
CO3	Write queries using normalization criteria and optimize queries				
CO4	Compare and contrast various indexing strategies in different database systems				
CO5	Appraise how advanced databases differ from traditional databases.				

R2017	**CS8451 DESIGN AND ANALYSIS OF ALGORITHMS**	**L**	**T**	**P**	**C**
		3	**0**	**0**	**3**
CO1	Design algorithms for various computing problems.				
CO2	Analyze the time and space complexity of algorithms				
CO3	Critically analyze the different algorithm design techniques for a given problem.				
CO4	Modify existing algorithms to improve efficiency.				

R2017	**CS8493 OPERATING SYSTEMS**	**L**	**T**	**P**	**C**
		3	**0**	**0**	**3**
CO1	Analyze various scheduling algorithms.				
CO2	Understand deadlock, prevention and avoidance algorithms.				
CO3	Compare and contrast various memory management schemes.				
CO4	Understand the functionality of file systems.				

CO5	Perform administrative tasks on Linux Servers				
CO6	Compare iOS and Android Operating Systems.				
R2017	**CS8494 SOFTWARE ENGINEERING**	**L**	**T**	**P**	**C**
		3	**0**	**0**	**3**
CO1	Identify the key activities in managing a software project.				
CO2	Compare different process models.				
CO3	Concepts of requirements engineering and Analysis Modeling.				
CO4	Apply systematic procedure for software design and deployment.				
CO5	Compare and contrast the various testing and maintenance.				
CO6	Manage project schedule, estimate project cost and effort required.				

2017	**CS8481 DATABASE MANAGEMENT SYSTEMS LABORATORY**	**L**	**T**	**P**	**C**
		4	**0**	**0**	**4**
CO1	Use typical data definitions and manipulation commands.				
CO2	Design applications to test Nested and Join Queries				
CO3	Implement simple applications that use Views				
CO4	Implement applications that require a Front-end Tool				
CO5	Critically analyze the use of Tables, Views, Functions and Procedures				

R2017	**CS8461 OPERATING SYSTEMS LABORATORY**	**L**	**T**	**P**	**C**
		4	**0**	**0**	**4**
CO1	Compare the performance of various CPU Scheduling Algorithms				
CO2	Implement Deadlock avoidance and Detection Algorithms				
CO3	Implement Semaphores				
CO4	Create processes and implement IPC				
CO5	Analyze the performance of the various Page Replacement Algorithms				
CO6	Implement File Organization and File Allocation Strategies				
R2017	**HS8461 ADVANCED READING AND WRITING**	**L**	**T**	**P**	**C**
		4	**0**	**0**	**4**
CO1	Write different types of essays				
CO2	Write winning job applications.				
CO3	Read and evaluate texts critically				
CO4	Display critical thinking in various professional contexts				
	V SEMESTER				
R2017	**MA8551 ALGEBRA AND NUMBER THEORY**	**L**	**T**	**P**	**C**
		4	**0**	**0**	**4**
CO1	Apply the basic notions of groups, rings, fields which will then be used to solve related problems.				

CO2	Explain the fundamental concepts of advanced algebra and their role in modern mathematics and applied contexts.
CO3	Demonstrate accurate and efficient use of advanced algebraic techniques.
CO4	Demonstrate their mastery by solving non-trivial problems related to the concepts, and by proving simple theorems about the, statements proven by the text
CO5	Apply integrated approach to number theory and abstract algebra, and provide affirm basis for further reading and study in the subject.

R2017	**CS8591 COMPUTER NETWORKS**	**L**	**T**	**P**	**C**
		3	**0**	**0**	**3**
CO1	Understand the basic layers and its functions in computer networks.				
CO2	Evaluate the performance of a network				
CO3	Understand the basics of how data flows from one node to another.				
CO4	Analyze and design routing algorithms				
CO5	Design protocols for various functions in the network and Understand the working of various application layer protocols.				

R2017	**EC8691 MICRO PROCESSORS AND MICRO CONTROLLERS**	**L**	**T**	**P**	**C**
		3	**0**	**0**	**3**
CO1	Understand and execute programs based on 8086 microprocessor.				
CO2	Design Memory Interfacing circuits.				
CO3	Design and interface I/O circuits.				
CO4	Design and implement 8051 microcontroller based systems.				

R2017	**CS8501 THEORY OF COMPUTATION**	**L**	**T**	**P**	**C**
		3	**0**	**0**	**3**
CO1	Construct automata, regular expression for any pattern.				
CO2	Write Context free grammar for any construct.				
CO3	Design Turing machines for any language.				
CO4	Propose computation solutions using Turing machines.				
CO5	Derive whether ra problem is decidable or not.				

R2017	**CS8592 OBJECT ORIENTED ANALYSIS AND DESIGN**	**L**	**T**	**P**	**C**
		3	**0**	**0**	**3**
CO1	Express software design with UML diagrams				
CO2	Design software applications using OO concepts.				
CO3	Identify various scenarios based on software requirements				
CO4	Transform UML based software design into pattern based design using design patterns				
CO5	Understand the various testing methodologies for OO software				

R2017	OCE551 AIR POLLUTION AND CONTROL ENGINEERING	L	T	P	C
		3	0	0	3
CO1	An understanding of the nature and characteristics of air pollutants, noise pollution and basic concepts of air quality management				
CO2	Ability to identify, formulate and solve air and noise pollution problems				
CO3	Ability to design stacks and particulate air pollution control devices to meet applicable standards.				
CO4	Ability to select control equipments				
CO5	Ability to ensure quality, control and preventive measures				
R2017	EC8681 MICROPROCESSOR AND MICROCONTROLLER LABORATORY	L	T	P	C
		3	0	0	3
CO1	Write ALP Programmes for fixed and Floating Point and Arithmetic operations				
CO2	Interface different I/Os with processor				
CO3	Generate waveforms using Microprocessors				
CO4	Execute Programs in 8051				
CO5	Explain the difference between simulator and Emulator				
R2017	CS8582 OBJECTORIENTED ANALYSIS AND DESIGN LABORATORY	L	T	P	C
		3	0	0	3
CO1	Perform OO analysis and design for a given problem specification.				
CO2	Identify and map basic software requirements in UML mapping.				
CO3	Improve the software quality using design patterns and to explain the rationale behind				
CO4	Test the compliance of the software with the SRS				
R2017	CS8581 NETWORKS LABORATORY	L	T	P	C
		3	0	0	3
CO1	Implement various protocols using TCP and UDP.				
CO2	Compare the performance of different transport layer protocols.				
CO3	Use simulation tools to analyze the performance of various network protocols.				
CO4	Analyze various routing algorithms.				
CO5	Implement error correction codes				
	VI SEMESTER				
R2017	CS8651 INTERNET PROGRAMMING	L	T	P	C
		3	0	0	3
CO1	Construct a basic website using HTML and Cascading Style Sheets.				
CO2	Build dynamic webpage with validation using Java Script objects and by applying				
CO3	Develop server side programs using Servlets and JSP.				
CO4	Construct simple web pages in PHP and to represent data in XML format.				
CO5	Use AJAX and web services to develop interactive web applications				

R2017	CS8691 ARTIFICIAL INTELLIGENCE	L	T	P	C
		3	0	0	3
CO1	Use appropriate search algorithms for any AI problem				
CO2	Represent a problem using first order and predicate logic				
CO3	Provide the apt agent strategy to solve a given problem				
CO4	Design software agents to solve a problem				
CO5	Design applications for NLP that use Artificial Intelligence.				

R2017	CS8601 MOBILE COMPUTING	L	T	P	C
		3	0	0	3
CO1	Explain the basics of mobile telecommunication systems				
CO2	Illustrate the generations of telecommunication systems in wireless networks				
CO3	Determine the functionality of MAC, network layer and Identify a routing protocol for a				
CO4	Explain the functionality of Transport and Application layers				
CO5	Develop a mobile application using android/ blackberry/ ios/ Windows SDK				

R2017	CS8602 COMPILER DESIGN	L	T	P	C
		3	0	2	4
CO1	Understand the different phases of compiler.				
CO2	Design a lexical analyzer for a sample language.				
CO3	Apply different parsing algorithms to develop the parsers for a given grammar				
CO4	Understand syntax-directed translation and run-time environment.				
CO5	Learn to implement code optimization techniques and a simple code generator.				
CO6	Design and implement a scanner and a parser using LEX and YACC tools.				

R2017	CS8603 DISTRIBUTED SYSTEMS	L	T	P	C
		3	0	0	3
CO1	Elucidate the foundations and issues of distributed systems				
CO2	Understand the various synchronization issues and global state for distributed systems.				
CO3	UnderstandtheMutualExclusionandDeadlockdetectionalgorithmsindistributedsystems				
CO4	Describe the agreement protocols and fault tolerance mechanisms in distributed systems.				
CO5	Describethefeaturesofpeer-to-peeranddistributedsharedmemorysystems				

R2017	IT8076 SOFTWARE TESTING	L	T	P	C
		3	0	2	4
CO1	Design test cases suitable for a software development for different domains.				
CO2	Identify suitable tests to be carried out.				
CO3	Prepare test planning based on the document.				
CO4	Document test plans and test cases designed.				
CO5	Use automatic testing tools.				
CO6	Develop and validate a test plan				

R2017	CS8661 INTERNET PROGRAMMING LABORATORY	L	T	P	C
		3	0	2	4
CO1	Construct Web pages using HTML/XML and style sheets.				
CO2	Build dynamic web pages with validation using Java Script objects and by applying different event handling mechanisms.				
CO3	Develop dynamic web pages using server side scripting.				
CO4	Use PHP programming to develop web applications.				
CO5	Construct web applications using AJAX and web services				
R2017	CS8662 MOBILE APPLICATION DEVELOPMENT LABORATORY	L	T	P	C
		3	0	2	4
CO1	Develop mobile applications using GUI and Layouts.				
CO2	Develop mobile applications using Event Listener.				
CO3	Develop mobile applications using Databases.				
CO4	Develop mobile applications using RSS Feed, Internal/External Storage, SMS, Multithreading and GPS.				
CO5	Analyze and discover own mobile app for simple needs				
R2017	CS8611 MINI PROJECT	L	T	P	C
		3	0	2	4
CO1	Solve a specific problem right from its identification and literature review till the successful solution of the same				
CO2	Analyse the algorithm using simulation software which is designed from the base paper				
CO3	Explain the students to prepare project reports and publications				
CO4	Solve practical problem and find solution by formulating proper methodology.				
R2017	HS8581 PROFESSIONAL COMMUNICATION	L	T	P	C
		3	0	2	4
CO1	Make effective presentations				
CO2	Participate confidently in Group Discussions.				
CO3	Attend job interviews and be successful in them				
CO4	Develop adequate Soft Skills required for the workplace				
R2017	MG8591 PRINCIPLES OF MANAGEMENT	L	T	P	C
		3	0	0	3
CO1	Upon completion of the course, students will be able to have clear understanding of managerial functions like planning, organizing, staffing, leading & controlling and have same basic knowledge on international aspect of management.				

	VII SEMESTER				
R2017	**CS8792 CRYPTOGRAPHY AND NETWORK SECURITY**	**L**	**T**	**P**	**C**
		3	**0**	**0**	**3**
CO1	Understand the fundamentals of networks security, security architecture, threats and vulnerabilities				
CO2	Apply the different cryptographic operations of symmetric cryptographic algorithms				
CO3	Apply the different cryptographic operations of public key cryptography				
CO4	Apply the various Authentication schemes to simulate different applications.				
CO5	Understand various Security practices and System security standards				

R2017	**CS8791 CLOUD COMPUTING**	**L**	**T**	**P**	**C**
		3	**0**	**0**	**3**
CO1	Articulate the main concepts, key technologies, strengths and limitations of cloud				
CO2	Learn the key and enabling technologies that help in the development of cloud.				
CO3	Develop the ability to understand and use the architecture of compute and storage cloud, service and delivery models.				
CO4	Explain the core issues of cloud computing such as resource management and security.				
CO5	Be able to install and use current cloud technologies.				
CO6	Evaluate and choose the appropriate technologies, algorithms and approaches for implementation and use of cloud.				
R2017	**OBM752 HOSPITAL MANAGEMENT**	**L**	**T**	**P**	**C**
		3	**0**	**0**	**3**
CO1	Explain the principles of Hospital administration.				
CO2	Identify the importance of Human resource management.				
CO3	List various marketing research techniques.				
CO4	Identify Information management systems and its uses.				
CO5	Understand safety procedures followed in hospitals				
R2017	**GE8077 TOTAL QUALITY MANAGEMENT**	**L**	**T**	**P**	**C**
		3	**0**	**0**	**3**
CO1	The student would be able to apply the tools and techniques of quality management to manufacturing and services processes.				
R2017	**CS8079 HUMAN COMPUTER INTERACTION**	**L**	**T**	**P**	**C**
		3	**0**	**0**	**3**
CO1	Design effective dialog for HCI				
CO2	Design effective HCI for individuals and persons with disabilities.				
CO3	Assess the importance of user feedback.				
CO4	Explain the HCI implications for designing multimedia/ ecommerce/ e-learning Web sites				
CO5	Develop meaningful user interface				

R2017	CS8711CLOUDCOMPUTING LABORATORY	L	T	P	C
		3	0	0	3
CO1	Configure various virtualization tools such as Virtual Box, VMware workstation..				
CO2	Design and deploy a web application in a PaaS environment.				
CO3	Learn how to simulate a cloud environment to implement new schedulers.				
CO4	Install and use a generic cloud environment that can be used as a private cloud.				
CO5	Manipulate large data sets in a parallel environment				
R2017	IT8761 SECURITY LABORATORY	L	T	P	C
		3	0	0	3
CO1	Develop code for classical Encryption Techniques to solve the problems.				
CO2	Build cryptosystems by applying symmetric and public key encryption algorithms.				
CO3	Construct code for authentication algorithms.				
CO4	Develop a signature scheme using Digital signature standard.				
CO5	Demonstrate the network security system using open source tools				
	VIII SEMESTER				
R2017	GE8076 PROFESSIONAL ETHICS IN ENGINEERING	L	T	P	C
		3	0	0	3
CO1	Upon completion of the course, the student should be able to apply ethics in society, discuss the ethical issues related to engineering and realize the responsibilities and rights in				
R2017	CS8078 GREEN COMPUTING	L	T	P	C
		3	0	0	3
CO1	Acquire knowledge to adopt green computing practices to minimize negative impacts on the environment.				
CO2	Enhance the skill in energy saving practices in their use of hardware.				
CO3	Evaluate technology tools that can reduce paper waste and carbon footprint by the stakeholders.				
CO4	Understand the ways to minimize equipment disposal requirements				
R2017	CS8811PROJECT WORK	L	T	P	C
		3	0	0	3
CO1	Solve a specific problem right from its identification and literature review till the successful solution of the same				
CO2	Analyse the algorithm using simulation software which is designed from the base paper				
CO3	Explain the students to prepare project reports and publications				
CO4	Solve practical problem and find solution by formulating proper methodology.				
CO5					

COURSE OUTCOMES FOR B.E ELECTRICAL AND ELECTRONICS ENGINEERING

COURSEOUTCOMES

	I SEMESTER				
R2017	**HS8151 COMMUNICATIVE ENGLISH**	**L**	**T**	**P**	**C**
		4	**0**	**0**	**4**
CO1	Read articles of a general kind in magazines and news papers.				
CO2	Participate effectively in informal conversations; introduce themselves and their friends and express opinions in English				
CO3	Comprehend conversations and short talks delivered in English				
CO4	Write short essays of a general kind and personal letters and emails in English.				
R2017	**MA8151 ENGINEERING MATHEMATICS– I**	**L**	**T**	**P**	**C**
		4	**0**	**0**	**4**
CO1	Use both the limit definition and rules of differentiation to differentiate functions.				
CO2	Apply differentiation to solve maxima and minima problems.				
CO3	Evaluate integrals both by using Riemann sums and by using the Fundamental Theorem of Calculus.				
CO4	Apply integration to compute multiple integrals, area, volume, integrals in polar coordinates, in addition to change of order and change of variables.				
CO5	Evaluate integrals using techniques of integration, such as substitution, partial fractions and integration by parts.				
CO6	Determineconvergence/divergenceofimproperintegralsandevaluateconvergentimproperintegrals.				
CO7	Apply various techniques in solving differential equations.				
R2017	**PH8151 ENGINEERING PHYSICS**	**L**	**T**	**P**	**C**
		3	**0**	**0**	**3**
CO1	The students will gain knowledge on the basics of properties of matter and its applications				
CO2	The students will acquire knowledgeontheconceptsofwavesandopticaldevicesandtheirapplicationsinfibreoptics,				
CO3	The students will have adequate knowledge ontheconceptsofthermalpropertiesofmaterialsandtheirapplicationsinexpansion joints and				
CO4	The students will get knowledge on advanced physics concepts of quantum theory and its applications in tunneling microscopes				
CO5	The students will understand the basics of crystals, their structures and different crystal growth techniques.				
R2017	**CY8151 ENGINEERING CHEMISTRY**	**L**	**T**	**P**	**C**
		3	**0**	**0**	**3**
CO1	The knowledge gained on engineering materials, fuels, energy sources and water treatment techniques will facilitate better understanding of engineering processes and applications for further learning.				

R2017	GE8151 PROBLEMSOLVING AND PYTHONP ROGRAMMING	L	T	P	C
		3	0	0	3
CO1	Develop algorithmic solutions to simple computational problems				
CO2	Read, write, execute by hand simple Python programs.				
CO3	Structure simple Python programs for solving problems.				
CO4	Decomposea Python program into functions				
CO5	Represent compound data using Pythonlists, tuples, dictionaries				
CO6	Read and write data from/to filesin Python Programs.				

R2017	GE8152 ENGINEERING GRAPHICS	L	T	P	C
		2	0	4	4
CO1	Familiarize with the fundamentals and standards of Engineering graphics				
CO2	Perform Freeh and sketching of basic geometrical constructions and multiple views of objects.				
CO3	Project orthographic projections of lines and plane surfaces.				
CO4	Draw projections and solids and development of surfaces.				
CO5	Visualizeandtoprojectisometricandperspectivesectionsofsimplesolids.				

R2017	GE8161 PROBLEMSOLVING AND PYTHON PROGRAMMING LABORATORY	L	T	P	C
		4	0	0	4
CO1	Write, test, and debug simple Python programs.				
CO2	Implement Python programs with conditionals and loops.				
CO3	Develop Python programs step-wise by defining functions and calling them.				
CO4	Use Python lists, tuples, dictionaries for representing compound data.				
CO5	Read and write data from/to files in Python.				

R2017	BS8161 PHYSICS AND CHEMISTRY LABORATORY	L	T	P	C
		4	0	0	4
CO1	Apply principles of elasticity, optics and thermal properties for engineering applications.				
CO2	The students will be outfitted with hands-on knowledge in the quantitative chemical analysisof water quality related parameters.				

II SEMESTER					
R2017	**HS8251 TECHNICAL ENGLISH**	**L**	**T**	**P**	**C**
		4	**0**	**0**	**4**
CO1	Read technical texts and write area- specific texts effortlessly.				
CO2	Listen and comprehend lectures and talks in their area of specialisation successfully.				
CO3	Speak appropriately and effectively in varied formal and informal contexts.				
CO4	Write reports and winning job applications.				
R2017	**MA8251 ENGINEERING MATHEMATICS – II**	**L**	**T**	**P**	**C**
		4	**0**	**0**	**4**
CO1	Eigen values and eigenvectors, diagonalization of a matrix, Symmetric matrices, Positive definite matrices and similar matrices.				
CO2	Gradient, divergence and curl of a vector point function and related identities.				
CO3	Evaluation of line, surface and volume integrals using Gauss, Stokes and Green's theorems and their verification.				
CO4	Analytic functions, conformal mapping and complex integration.				
CO5	Laplace transform and inverse transform of simple functions, properties, various related theorems and application to differential equations with constant coefficients				

R2017	**PH8253 PHYSICS FOR ELECTRONICS ENGINEERING**	**L**	**T**	**P**	**C**
		3	**0**	**0**	**3**
CO1	Gain knowledge on classical and quantum electron theories, and energy band structures				
CO2	Acquire knowledge on basics of semiconductor physics and its applications in various devices				
CO3	Get knowledge on magnetic and dielectric properties of materials				
CO4	Have the necessary understanding on the functioning of optical materials for optoelectronics				
CO5	Understand the basics of quantum structures and their applications in spintronics and carbon electronics.				

R2017	**BE8252 BASIC CIVIL AND MECHANICAL ENGINEERING**	**L**	**T**	**P**	**C**
		4	**0**	**0**	**4**
CO1	Appreciate the Civil and Mechanical Engineering components of Projects.				
CO2	Explain the usage of construction material and proper selection of construction materials.				
CO3	Measure distances and area by surveying				
CO4	Identify the components used in power plant cycle.				
CO5	Demonstrate working principles of petrol and diesel engine.				
CO6	Elaborate the components of refrigeration and Air conditioning cycle				

R2017	EE8251 CIRCUIT THEORY	L	T	P	C
		2	2	0	3
CO1	Ability to analyse electrical circuits				
CO2	Ability to apply circuit theorems				
CO3	Ability to analyse transients				

R2017	GE8291 ENVIRONMENTAL SCIENCE AND ENGINEERING	L	T	P	C
		3	0	0	3
CO1	Environmental Pollution or problems cannot be solved by mere laws. Public participation is an important aspect which serves the environmental Protection. One will obtain knowledge on the following after completing the course				
CO2	Public awareness of environmental is at infant stage.				
CO3	Ignorance and incomplete knowledge has lead to misconceptions				
CO4	Development and improvement in std. of living has lead to serious environmental disasters				

R2017	GE8261 ENGINEERING PRACTICES LABORATORY	L	T	P	C
		0	0	4	2
CO1	Fabricate carpentry components and pipe connections including plumbing works.				
CO2	Use welding equipments to join the structures.				
CO3	Carry out the basic machining operations				
CO4	Make the models using sheet metal works				
CO5	Illustrate on centrifugal pump, Air conditioner, operations of smithy, foundary and fittings				
CO6	Carry out basic home electrical works and appliances				
CO7	Measure the electrical quantities				
CO8	Elaborate on the components, gates, soldering practices.				
R2017	EE8261ELECTRIC CIRCUITS LABORATORY	L	T	P	C
		0	0	4	2
CO1	Understand and apply circuit theorems and concepts in engineering applications.				
CO2	Simulate electric circuits.				

III SEMESTER					
R2017	**MA8353 TRANSFORMS AND PARTIAL DIFFERENTIAL EQUATIONS**	**L**	**T**	**P**	**C**
		4	**0**	**0**	**4**
CO1	Understand how to solve the given standard partial differential equations.				
CO2	Solve differential equations using Fourier series analysis which plays a vital role in engineering applications.				
CO3	Appreciate the physical significance of Fourier series techniques in solving one and two dimensional heat flow problems and one dimensional wave equations.				
CO4	Understand the mathematical principles on transforms and partial differential equations would provide them the ability to formulate and solve some of the physical problems of				
CO5	Use the effective mathematical tools for the solutions of partial differential equations by using Z transform techniques for discrete time systems.				
R2017	**EE8351 DIGITAL LOGIC CIRCUITS**	**L**	**T**	**P**	**C**
		2	**2**	**0**	**3**
CO1	Ability to design combinational and sequential Circuits.				
CO2	Ability to simulate using software package.				
CO3	Ability to study various number systems and simplify the logical expressions using Boolean				
CO4	Ability to design various synchronous and asynchronous circuits.				
CO5	Ability to introduce asynchronous sequential circuits and PLDs				
CO6	Ability to introduce digital simulation for development of application oriented logic circuits.				
R2017	**EE8391 ELECTROMAGNETIC THEORY**	**L**	**T**	**P**	**C**
		2	**2**	**0**	**3**
CO1	Ability to understand the basic mathematical concepts related to electromagnetic vector fields.				
CO2	Ability to understand the basic concepts about electrostatic fields, electrical potential, energy density and their applications.				
CO3	Ability to acquire the knowledge in magneto static fields, magnetic flux density, vector potential and its applications.				
CO4	Ability to understand the different methods of emf generation and Maxwell's equations				
CO5	Ability to understand the basic concepts electromagnetic waves and characterizing				
CO6	Ability to understand and compute Electromagnetic fields and apply them for design and analysis of electrical equipment and systems				
R2017	**EE8301 ELECTRICAL MACHINES – I**	**L**	**T**	**P**	**C**
		2	**2**	**0**	**3**
CO1	Ability to analyze the magnetic-circuits.				
CO2	Ability to acquire the knowledge in constructional details of transformers.				
CO3	Ability to understand the concepts of electromechanical energy conversion.				
CO4	Ability to acquire the knowledge in working principles of DC Generator.				
CO5	Ability to acquire the knowledge in working principles of DC Motor				
CO6	Ability to acquire the knowledge in various losses taking place in D.C. Machines				

R2017	**EC8353 ELECTRON DEVICES AND CIRCUITS**	**L**	**T**	**P**	**C**
		3	**0**	**0**	**3**
CO1	Explain the structure and working operation of basic electronic devices.				
CO2	Able to identify and differentiate both active and passive elements				
CO3	Analyze the characteristics of different electronic devices such as diodes and transistors				
CO4	Choose and adapt the required components to construct an amplifier circuit.				
CO5	Employ the acquired knowledge in design and analysis of oscillators				
R2017	**ME8792 POWER PLANT ENGINEERING**	**L**	**T**	**P**	**C**
		3	**0**	**0**	**3**
CO1	Explain the layout, construction and working of the components inside a thermal power				
CO2	Explain the layout, construction and working of the components inside a Diesel, Gas and Combined cycle power plants.				
CO3	Explain the layout, construction and working of the components inside nuclear power plants.				
CO4	Explain the layout, construction and working of the components inside Renewable energy				
CO5	Explain the applications of power plants while extend their knowledge to power plant economics and environmental hazards and estimate the costs of electrical energy production.				
R2017	**EC8311 ELECTRONICS LABORATORY**	**L**	**T**	**P**	**C**
		0	**0**	**4**	**2**
CO1	Ability to understand and analyse electronic circuits.				
R2017	**EE8311 ELECTRICAL MACHINES LABORATORY-I**	**L**	**T**	**P**	**C**
		0	**0**	**4**	**2**
CO1	Ability to understand and analyze DC Generator				
CO2	Ability to understand and analyze DC Motor				
CO3	Ability to understand and analyse Transformers.				
IV SEMESTER					
R2017	**MA8491 NUMERICAL METHODS**	**L**	**T**	**P**	**C**
		4	**0**	**0**	**4**
CO1	Understand the basic concepts and techniques of solving algebraic and transcendental equations.				
CO2	Appreciate the numerical techniques of interpolation and error approximations in various intervals in real life situations.				
CO3	Apply the numerical techniques of differentiation and integration for engineering problems.				
CO4	Understand the knowledge of various techniques and methods for solving first and second order ordinary differential equations.				
CO5	Solve the partial and ordinary differential equations with initial and boundary conditions by using certain techniques with engineering applications.				

R2017	EE8401 ELECTRICAL MACHINES – II	L	T	P	C
		2	2	0	3
CO1	Ability to understand the construction and working principle of Synchronous Generator				
CO2	Ability to understand MMF curves and armature windings.				
CO3	Ability to acquire knowledge on Synchronous motor.				
CO4	Ability to understand the construction and working principle of Three phase Induction Motor				
CO5	Ability to understand the construction and working principle of Special Machines				
CO6	Ability to predetermine the performance characteristics of Synchronous Machines.				
R2017	EE8402 TRANSMISSION AND DISTRIBUTION	L	T	P	C
		3	0	0	3
CO1	To understand the importance and the functioning of transmission line parameters.				
CO2	To understand the concepts of Lines and Insulators.				
CO3	To acquire knowledge on the performance of Transmission lines.				
CO4	To understand the importance of distribution of the electric power in power system.				
CO5	To acquire knowledge on Underground Cabilitys				
CO6	To become familiar with the function of different components used in Transmission and Distribution levels of power system and modelling of these components.				
R2017	EE8403 MEASUREMENTS AND INSTRUMENTATION	L	T	P	C
		3	0	0	3
CO1	To acquire knowledge on Basic functional elements of instrumentation				
CO2	To understand the concepts of Fundamentals of electrical and electronic instruments				
CO3	Ability to compare between various measurement techniques				
CO4	To acquire knowledge on Various storage and display devices				
CO5	To understand the concepts Various transducers and the data acquisition systems				
CO6	Ability to model and analyze electrical and electronic Instruments and understand the operational features of display Devices and Data Acquisition System.				
R2017	EE8451 LINEAR INTEGRATED CIRCUITS AND APPLICATIONS	L	T	P	C
		3	0	0	3
CO1	Ability to acquire knowledge in IC fabrication procedure				
CO2	Ability to analyze the characteristics of Op-Amp				
CO3	To understand the importance of Signal analysis using Op-amp based circuits.				
CO4	Functional blocks and the applications of special ICs like Timers, PLL circuits,				
CO5	Functional blocks and the applications of special ICs like Timers, PLL circuits, regulator Circuits.				
CO6	To understand and acquire knowledge on the Applications of Op-amp				
CO7	Ability to understand and analyse, linear integrated circuits their Fabrication and Application.				

R2017	IC8451 CONTROL SYSTEMS	L	T	P	C
		3	2	0	4
CO1	Ability to develop various representations of system based on the knowledge of Mathematics, Science and Engineering fundamentals.				
CO2	Ability to do time domain and frequency domain analysis of various models of linear				
CO3	Ability to interpret characteristics of the system to develop mathematical model.				
CO4	Ability to design appropriate compensator for the given specifications.				
CO5	Ability to come out with solution for complex control problem.				
CO6	Ability to understand use of PID controller in closed loop system.				
R2017	EE8411 ELECTRICAL MACHINES LABORATORY - II	L	T	P	C
		0	0	4	2
CO1	Ability to understand and analyze EMF and MMF methods				
CO2	Ability to analyze the characteristics of V and Inverted V curves				
CO3	Ability to understand the importance of Synchronous machines				
CO4	Ability to understand the importance of Induction Machines				
CO5	Ability to acquire knowledge on separation of losses				
R2017	EE8461 LINEAR AND DIGITAL INTEGRATED CIRCUITS LABORATORY	L	T	P	C
		0	0	4	2
CO1	Ability to understand and implement Boolean Functions.				
CO2	Ability to understand the importance of code conversion				
CO3	Ability to Design and implement 4-bit shift registers				
CO4	Ability to acquire knowledge on Application of Op-Amp				
CO5	Ability to Design and implement counters using specific counter IC.				
R2017	EE8412 TECHNICAL SEMINAR	L	T	P	C
		0	0	2	1
CO1	Ability to review, prepare and present technological developments				
CO2	Ability to face the placement interviews				
V SEMESTER					
R2017	EE8501 POWER SYSTEM ANALYSIS	L	T	P	C
		3	0	0	3
CO1	Ability to model the power system under steady state operating condition				
CO2	Ability to understand and apply iterative techniques for power flow analysis				
CO3	Ability to model and carry out short circuit studies on power system				
CO4	Ability to model and analyze stability problems in power system				
CO5	Ability to acquire knowledge on Fault analysis.				
CO6	Ability to model and understand various power system components and carry out power flow, short circuit and stability studies.				

R2017	EE8551 MICROPROCESSORS AND MICROCONTROLLERS	L	T	P	C
		3	0	0	3
CO1	Ability to acquire knowledge in Addressing modes & instruction set of 8085 & 8051.				
CO2	Ability to need & use of Interrupt structure 8085 & 8051.				
CO3	Ability to understand the importance of Interfacing				
CO4	Ability to explain the architecture of Microprocessor and Microcontroller.				
CO5	Ability to write the assembly language programme.				
CO6	Ability to develop the Microprocessor and Microcontroller based applications.				
R2017	EE8552 POWER ELECTRONICS	L	T	P	C
		3	0	0	3
CO1	Ability to analyse AC-AC and DC-DC and DC-AC converters.				
CO2	Ability to choose the converters for real time applications.				
R2017	EE8591 DIGITAL SIGNAL PROCESSING	L	T	P	C
		2	2	0	3
CO1	Ability to understand the importance of Fourier transform, digital filters and DS Processors.				
CO2	Ability to acquire knowledge on Signals and systems & their mathematical representation.				
CO3	Ability to understand and analyze the discrete time systems.				
CO4	Ability to analyze the transformation techniques & their computation.				
CO5	Ability to understand the types of filters and their design for digital implementation.				
CO6	Ability to acquire knowledge on programmability digital signal processor & quantization effects.				
R2017	CS8392 OBJECT ORIENTED PROGRAMMING	L	T	P	C
		3	0	0	3
CO1	Develop Java programs using OOP principles				
CO2	Develop Java programs with the concepts inheritance and interfaces				
CO3	Build Java applications using exceptions and I/O streams				
CO4	Develop Java applications with threads and generics classes				
CO5	Develop interactive Java programs using swings				
R2017	EE8511 CONTROL AND INSTRUMENTATION LABORATORY	L	T	P	C
		0	0	4	2
CO1	Ability to understand control theory and apply them to electrical engineering problems.				
CO2	Ability to analyze the various types of converters.				
CO3	Ability to design compensators				
CO4	Ability to understand the basic concepts of bridge networks.				
CO5	Ability to the basics of signal conditioning circuits.				
CO6	Ability to study the simulation packages.				

R2017	HS8581 PROFESSIONAL COMMUNICATION	L	T	P	C
		0	0	2	1
CO1	Make effective presentations				
CO2	Participate confidently in Group Discussions.				
CO3	Attend job interviews and be successful in them.				
CO4	Develop adequate Soft Skills required for the workplace				
R2017	CS8383 OBJECT ORIENTED PROGRAMMING LABORATORY	L	T	P	C
		0	0	4	2
CO1	Develop and implement Java programs with arraylist, exception handling and multithreading				
CO2	Develop and implement Java programs for simple applications that make use of classes,packages and interfaces.				
CO3	Design applications using file processing, generic programming and event handling.				
	VI SEMESTER				
R2017	EE8601 SOLID STATE DRIVES	L	T	P	C
		3	0	0	3
CO1	Ability to understand and suggest a converter for solid state drive.				
CO2	Ability to select suitability drive for the given application.				
CO3	Ability to study about the steady state operation and transient dynamics of a motor load				
CO4	Ability to analyze the operation of the converter/chopper fed dc drive.				
CO5	Ability to analyze the operation and performance of AC motor drives.				
CO6	Ability to analyze and design the current and speed controllers for a closed loop solid state DC motor drive.				
R2017	EE8602 PROTECTION AND SWITCHGEAR	L	T	P	C
		3	0	0	3
CO1	Ability to understand and analyze Electromagnetic and Static Relays.				
CO2	Ability to suggest suitability circuit breaker.				
CO3	Ability to find the causes of abnormal operating conditions of the apparatus and system.				
CO4	Ability to analyze the characteristics and functions of relays and protection schemes.				
CO5	Ability to study about the apparatus protection, static and numerical relays.				
CO6	Ability to acquire knowledge on functioning of circuit breaker.				
R2017	EE8691 EMBEDDED SYSTEMS	L	T	P	C
		3	0	0	3
CO1	Ability to understand and analyze Embedded systems.				
CO2	Ability to suggest an embedded system for a given application.				
CO3	Ability to operate various Embedded Development Strategies				
CO4	Ability to study about the bus Communication in processors.				
CO5	Ability to acquire knowledge on various processor scheduling algorithms.				

CO6	Ability to understand basics of Real time operating system.				
R2017	**EE8661 POWER ELECTRONICS AND DRIVES LABORATORY**	**L**	**T**	**P**	**C**
		0	**0**	**4**	**2**
CO1	Ability to practice and understand converter and inverter circuits and apply software for engineering problems.				
CO2	Ability to experiment about switching characteristics various switches.				
CO3	Ability to analyze about AC to DC converter circuits.				
CO4	Ability to analyze about DC to AC circuits.				
CO5	Ability to acquire knowledge on AC to AC converters				
CO6	Ability to acquire knowledge on simulation software.				

R2017	**EE8681 MICROPROCESSORS AND MICROCONTROLLERS LABORATORY**	**L**	**T**	**P**	**C**
		0	**0**	**4**	**2**
CO1	Ability to understand and apply computing platform and software for engineering problems.				
CO2	Ability to programming logics for code conversion.				
CO3	Ability to acquire knowledge on A/D and D/A.				
CO4	Ability to understand basics of serial communication.				
CO5	Ability to understand and impart knowledge in DC and AC motor interfacing.				
CO6	Ability to understand basics of software simulators.				
R2017	**EE8611 MINI PROJECT**	**L**	**T**	**P**	**C**
		0	**0**	**4**	**2**
CO1	On Completion of the mini project work students will be in a position to take up their final year project work and find solution by formulating proper methodology.				
VII SEMESTER					
R2017	**EE8701 HIGH VOLTAGE ENGINEERING**	**L**	**T**	**P**	**C**
		3	**0**	**0**	**3**
CO1	Ability to understand Transients in power system.				
CO2	Ability to understand Generation and measurement of high voltage.				
CO3	Ability to understand High voltage testing.				
CO4	Ability to understand various types of over voltages in power system.				
CO5	Ability to measure over voltages.				
CO6	Ability to test power apparatus and insulation coordination				
R2017	**EE8702 POWER SYSTEM OPERATION AND CONTROL**	**L**	**T**	**P**	**C**
		3	**0**	**0**	**3**
CO1	Ability to understand the day-to-day operation of electric power system.				
CO2	Ability to analyze the control actions to be implemented on the system to meet the minute-to-minute variation of system demand.				
CO3	Ability to understand the significance of power system operation and control.				
CO4	Ability to acquire knowledge on real power-frequency interaction.				

CO5	Ability to understand the reactive power-voltage interaction.				
CO6	Ability to design SCADA and its application for real time operation.				
R2017	**EE8703 RENEWABLE ENERGY SYSTEMS**	**L**	**T**	**P**	**C**
		3	**0**	**0**	**3**
CO1	Ability to create awareness about renewable Energy Sources and technologies.				
CO2	Ability to get adequate inputs on a variety of issues in harnessing renewable Energy.				
CO3	Ability to recognize current and possible future role of renewable energy sources.				
CO4	Ability to explain the various renewable energy resources and technologies and their				
CO5	Ability to understand basics about biomass energy.				
	Ability to acquire knowledge about solar energy.				
R2017	**EE8711 POWER SYSTEM SIMULATION LABORATORY**	**L**	**T**	**P**	**C**
		0	**0**	**4**	**2**
CO1	Ability to understand power system planning and operational studies.				
CO2	Ability to acquire knowledge on Formation of Bus Admittance and Impedance Matrices and Solution of Networks.				
CO3	Ability to analyze the power flow using GS and NR method				
CO4	Ability to find Symmetric and Unsymmetrical fault				
CO5	Ability to understand the economic dispatch.				
CO6	Ability to analyze the electromagnetic transients.				
R2017	**EE8712 RENEWABLE ENERGY SYSTEMS LABORATORY**	**L**	**T**	**P**	**C**
		0	**0**	**4**	**2**
CO1	Ability to understand and analyze Renewable energy systems.				
CO2	Ability to train the students in Renewable Energy Sources and technologies.				
CO3	Ability to provide adequate inputs on a variety of issues in harnessing Renewable Energy.				
CO4	Ability to simulate the various Renewable energy sources.				
CO5	Ability to recognize current and possible future role of Renewable energy sources.				
CO6	Ability to understand basics of Intelligent Controllers.				
R2017	**EE8811 PROJECT WORK**	**L**	**T**	**P**	**C**
		0	**0**	**20**	**10**
CO1	On Completion of the project work students will be in a position to take up any challenging practical problems and find solution by formulating proper methodology.				
R2017	**IC8651 ADVANCED CONTROL SYSTEM**	**L**	**T**	**P**	**C**
		2	**2**	**0**	**3**
CO1	Able to design state feedback controller and state observer.				
CO2	Able to understand and analyse linear and nonlinear systems using phase plane method.				

CO3	Able to understand and analyse nonlinear systems using describing function method.				
CO4	Able to understand and design optimal controller.				
CO5	Able to understand optimal estimator including Kalman Filter.				
CO6	Ability to apply advanced control strategies to practical engineering problems				
R2017	**MG8591 – PRINCIPLES OF MANAGEMENT**	**L**	**T**	**P**	**C**
		3	**0**	**0**	**3**
	Ability to have clear understanding of managerial functions like planning, organizing, staffing, leading & controlling and have same basic knowledge on international aspect of management				
R2017	**EE8018 – MICRO CONTROLLER BASED SYSTEM DESIGN**	**L**	**T**	**P**	**C**
		3	**0**	**0**	**3**
	Ability to understand and apply computing platform and software for engineering problems.				
	Ability to understand the concepts of Architecture of PIC microcontroller				
	Ability to acquire knowledge on Interrupts and timers.				
	Ability to understand the importance of Peripheral devices for data communication.				
	Ability to understand the basics of sensor interfacing				
	Ability to acquire knowledge in Architecture of ARM processors				

COURSE OUTCOMES FOR B.E ELECTRONICS AND COMMUNICATION ENGINEERING

COURSEOUTCOMES

R2017	HS8151 COMMUNICATIVE ENGLISH
CO1	Read articles of a general kind in magazines and newspapers.
CO2	Participate effectively in informal conversations; introduce themselves and their friends and express opinions in English
CO3	Comprehend conversations and short talks delivered in English
CO4	Write short essays of a general kind and personal letters and emails in English.

R2017	MA8151 ENGINEERING MATHEMATICS–I
CO1	Use both the limit definition and rules of differentiation to differentiate functions.
CO2	Apply differentiation to solve maxima and minima problems.
CO3	Evaluate integrals both by using Riemann sums and by using the Fundamental Theorem of Calculus.
CO4	Apply integration to compute multiple integrals, area, volume, integrals in polar coordinates, in addition to change of order and change of variables.
CO5	Evaluate integrals using techniques of integration, such as substitution, partial fractions and integration by parts.
CO6	Determine convergence/divergence of improper integrals and evaluate convergent improper integrals.
CO7	Apply various techniques in solving differential equations.

R2017	PH8151 ENGINEERING PHYSICS
CO1	The students will gain knowledge on the basics of properties of matter and its applications
CO2	The students will acquire knowledge on the concepts of waves and optical devices and their applications in fibre optics,
CO3	The students will have adequate knowledge on the concepts of thermal properties of materials and their applications in expansion joints and heat exchangers
CO4	The students will get knowledge on advanced physics concepts of quantum theory and its applications in tunneling microscopes
CO5	The students will understand the basics of crystals, their structures and different crystal growth techniques.

R2017	CY8151 ENGINEERING CHEMISTRY
CO1	The knowledge gained on engineering materials, fuels, energy sources and water treatment techniques will facilitate better understanding of engineering processes and applications for further learning.

R2017	GE8151 PROBLEM SOLVING AND PYTHON PROGRAMMING
CO1	Develop algorithmic solutions to simple computational problems
CO2	Read, write, execute by hand simple Python programs.
CO3	Structure simple Python programs for solving problems.
CO4	Decompose a Python program into functions
CO5	Represent compound data using Python lists, tuples, dictionaries
CO6	Read and write data from/to files in Python Programs.

R2017	GE8152ENGINEERINGGRAPHICS
CO1	Familiarize with the fundamentals and standards of Engineering graphics
CO2	Perform free hand sketching of basic geometrical constructions and multiple views of objects.
CO3	Project orthographic projections of lines and plane surfaces.
CO4	Draw projections and solids and development of surfaces.
CO5	Visualize and to project isometric and perspective sections of simple solids.

R2017	GE8161 PROBLEM SOLVING AND PYTHON PROGRAMMING LABORATORY
CO1	Write, test, and debug simple Python programs.
CO2	Implement Python programs with conditionals and loops.
CO3	Develop Python programs step-wise by defining functions and calling them.
CO4	Use Python lists, tuples, dictionaries for representing compound data.
CO5	Read and write data from/to files in Python.

R2017	BS8161 PHYSICS AND CHEMISTRY LABORATORY
CO1	Apply principles of elasticity, optics and thermal properties for engineering applications.
CO2	The students will be outfitted with hands-on knowledge in the quantitative chemical analysis of water quality related parameters.
R2017	**HS8251 TECHNICAL ENGLISH**
CO1	Read technical texts and write area- specific texts effortlessly.
CO2	Listenandcomprehendlecturesandtalksintheirareaofspecialisationsuccessfully.
CO3	Speak appropriately and effectively in varied formal and informal contexts.
CO4	Write reports and winning job applications.

R2017	MA8251 ENGINEERING MATHEMATICS–II
CO1	Eigenvalues and eigenvectors, diagonalization of a matrix, Symmetric matrices, Positive definite matrices and similar matrices.
CO2	Gradient, divergence and curl of a vector point function and related identities.
CO3	Evaluation of line, surface and volume integrals using Gauss, Stokes and Green‘s theorems and their verification.
CO4	Analytic functions, conformal mapping and complex integration.
CO5	Laplace transform and inverse transform of simple functions, properties, various related theorems and application to differential equations with constant coefficients.

R2017	PH8253 PHYSICS FOR ELECTRONICS ENGINEERING
CO1	Gain knowledge on classical and quantum electron theories, and energy band structuues,
CO2	Acquire knowledge on basics of semiconductor physics and its applications in various devices,
CO3	Get knowledge on magnetic and dielectric properties of materials,
CO4	Have the necessary understanding on the functioning of optical materials for optoelectronics,

CO5	Understand the basics of quantum structures and their applications in spintronics and carbon electronics**.**

R2017	**BE8254 BASIC ELECTRICAL AND INSTRUMENTATION ENGINEERING**
CO1	Understand the concept of three phase power circuits and measurement.
CO2	Comprehend the concepts in electrical generators, motors and transformers
CO3	Choose appropriate measuring instruments for given application

R2017	**EC8251 CIRCUITAN ALYSIS**
CO1	Develop the capacity to analyze electrical circuits, apply the circuit theorems in realtime
CO2	Design and understand and evaluate the AC and DC circuits.
R2017	**EC8252 ELECTRONIC DEVICES**
CO1	Explain the V-I characteristic of diode, UJT and SCR
CO2	Describe the equivalence circuits of transistors
CO3	Operate the basic electronic devices such as PN junction diode, Bipolar and Field effect Transistors, Power control devices, LED, LCD and other Opto-electronic devices

R2017	**EC8261 CIRCUITS AND DEVICES LABORATORY**
CO1	Analyze the characteristics of basic electronic devices
CO2	Design RL and RC circuits
CO3	Verify Thevinin & Norton theorem KVL & KCL, and Super Position Theorems

R2017	**GE8261 ENGINEERING PRACTICES LABORATORY**
CO1	Fabricate carpentry components and pipe connections including plumbing works.
CO2	Use welding equipments to join the structures.
CO3	Carryout the basic machining operations
CO4	Make the models using sheet metal works
CO5	Illustrate on centrifugal pump, Air conditioner, operations of smithy, foundary and fittings
CO6	Carryout basic home electrical works and appliances
CO7	Measure the electrical quantities
CO8	Elaborate on the components, gates, soldering practices.

R2017	**MA8352 LINEAR ALGEBRA AND PARTIAL DIFFERENTIAL EQUATIONS**
CO1	Explain the fundamental concepts of advanced algebra and their role in modern mathematics and applied contexts.
CO2	Demonstrate accurate and efficient use of advanced algebraic techniques.
CO3	Demonstrate their mastery by solving non-trivial problems related to the concepts and by proving simple theorems about

CO4	Able to solve various types of partial differential equations.
CO5	Able to solve engineering problems using Fourier series.

R2017	**EC8393 FUNDAMENTALS OF DATA STRUCTURES IN C**
CO1	Implement linear and non-linear data structure operations using C
CO2	Suggest appropriate linear / non-linear data structure for any given dataset.
CO3	Apply hashing concepts for a given problem
CO4	Modify or suggest new data structure for an application

R2017	**EC8351 ELECTRONIC CIRCUITS I**
CO1	Acquire knowledge of Working principles, characteristics and applications of BJT and FET, Frequency response characteristics of BJT and FET amplifiers
CO2	Analyze the performance of small signal BJT and FET amplifiers – single stage and multistage amplifiers
CO3	Apply the knowledge gained in the design of Electronic circuits

R2017	**EC8352 SIGNALS AND SYSTEMS**
CO1	To be able to determine if a given system is linear / causal / stable
CO2	Capable of determining the frequency components present in a deterministic signal
CO3	Capable of characterizing LTI systems in the time domain and frequency domain
CO4	To be able to compute the output of an LTI system in the time and frequency domains

R2017	**EC8392 DIGITALEL ECTRONICS**
CO1	Use digital electronics in the present contemporary world
CO2	Design various combinational digital circuits using logic gates
CO3	Do the analysis and design procedures for synchronous and asynchronous sequential circuits
CO4	Use the semiconductor memories and related technology
CO5	Use electronic circuits involved in the design of logic gates

R2017	**EC8391 CONTROL SYSTEMS ENGINEERING**
CO1	Identify the various control system components and their representations.
CO2	Analyze the various time domain parameters.
CO3	Analysis the various frequency response plots and its system.
CO4	Apply the concepts of various system stability criterions.
CO5	Design various transfer functions of digital control system using state variable models.

R2017	**EC8381 FUNDAMENTALS OF DATA STRUCTURES IN C LABORATORY**
CO1	Write basic and advanced programs in C
CO2	Implement functions and recursive functions in C
CO3	Implement data structures using C

CO4	Choose appropriate sorting algorithm for an application and implement it in a modularized way

R2017	**EC8361 ANALOG AND DIGITAL CIRCUITS LABORATORY**
CO1	Design and Test rectifiers, filters and regulated power supplies.
CO2	Design and Test BJT/JFET amplifiers.
CO3	Differentiate cascade and cascade amplifiers
CO4	Analyze the limitation in band width of single stage and multi stage amplifier
CO5	Measure CMRR in differential amplifier
CO6	Simulate and analyze amplifier circuits using P Spice.
CO7	Design and Test the digital logic circuits.

R2017	**HS8381 INTERPERSONAL SKILLS/LISTENING & SPEAKING**
CO1	Listen and respond appropriately.
CO2	Participate in group discussions
CO3	Make effective presentations
CO4	Participate confidently and appropriately in conversations both formal and in formal

R2017	**MA8451 PROBABILITY AND RANDOM PROCESSES**
CO1	Understand the fundamental knowledge of the concepts of probability and have knowledge of standard distributions which can describe real life phenomenon.
CO2	Understand the basic concepts of one and two dimensional random variables and apply in engineering applications
CO3	Apply the concept of random processes in engineering disciplines.
CO4	Understand and apply the concept of correlation and spectral densities.
CO5	The students will have an exposure of various distribution functions and help in acquiring skills in handling situations involving more than one variable. Able to analyze the response of random inputs to linear time invariant systems.

R2017	**EC8452 ELECTRONIC CIRCUITS II**
CO1	Analyze different types of amplifier, oscillator and multivibrator circuits
CO2	Design BJT amplifier and oscillator circuits
CO3	Analyze transistorized amplifier and oscillator circuits
CO4	Design and analyze feedback amplifiers
CO5	Design LC and RC oscillators, tuned amplifiers, wave shaping circuits, multivibrators, power amplifier and DC convertors.

R2017	**EC8491 COMMUNICATION THEORY**
CO1	Design AM communication systems
CO2	Design Angle modulated communication systems
CO3	Apply the concepts of Random Process to the design of Communication systems

CO4	Analyze the noise performance of AM and FM systems
CO5	Gain knowledge in sampling and quantization

R2017	**EC8451 ELECTROMAGNETIC FIELDS**
CO1	Display an understanding of fundamental electromagnetic laws and concepts
CO2	WriteMaxwell'sequationsinintegral,differentialandphasorformsandexplaintheirphysicalmeaning
CO3	Explain electromagnetic wave propagation in loss and in lossless media
CO4	Solve simple problems requiring estimation of electric and magnetic field quantities based on, these concepts and laws

R2017	**EC8453 LINEAR INTEGRATED CIRCUITS**
CO1	Design linear and nonlinear applications of OP–AMPS
CO2	Design applications using analog multiplier and PLL
CO3	Design ADC and DAC using OP–AMPS
CO4	Generate wave forms using OP–AMP Circuits
CO5	Analyze special function Ics

R2017	**GE8291 ENVIRONMENTAL SCIENCE AND ENGINEERING**
CO1	Environmental Pollution or problems cannot be solved by mere laws. Public participation is an important aspect which serves the environmental Protection. One will obtain knowledge on the following after completing the course.
CO2	Public awareness of environmental is at infant stage.
CO3	Ignorance and incomplete knowledge has lead to misconceptions
CO4	Development and improvement instead of living has lead to serious environmental disasters
R2017	**EC8461 CIRCUITS DESIGN AND SIMULATION LABORATORY**
CO1	Analyze various types of feedback amplifiers
CO2	Design oscillators, tuned amplifiers, wave-shaping circuits and multivibrators
CO3	Design and simulate feedback amplifiers, oscillators, tuned amplifiers, wave-shaping circuits and multivibrators using SPICE Tool.

R2017	**EC8462 LINEARINTEGRATED CIRCUITS LABORATORY**
CO1	Design amplifiers, oscillators, D-A converters using operational amplifiers.
CO2	Design filters using op-amp and performs an experiment on frequency response.
CO3	Analyze the working of PLL and describe its application as a frequency multiplier.
CO4	Design DC power supply using ICs.
CO5	Analyze the performance of filters, multivibrators, A/D converter and analog multiplier using SPICE.

R2017	EC8501DIGITALCOMMUNICATION
CO1	Design PCM systems
CO2	Design and implement base band transmission schemes
CO3	Design and implement band pass signaling schemes
CO4	Analyze the spectral characteristics of band pass signaling schemes and their noise performance
CO5	Design error control coding schemes

R2017	EC8553DISCRETE-TIMESIGNALPROCESSING
CO1	Apply DFT for the analysis of digital signals and systems
CO2	Design IIR and FIR filters
CO3	Characterize the effects of finite precision representation on digital filters
CO4	Design multirate filters
CO5	Apply adaptive filters appropriately in communication systems.

R2017	EC8552 COMPUTER ARCHITECTURE AND ORGANIZATION
CO1	Describe data representation, instruction formats and the operation of a digital computer
CO2	Illustrate the fixed point and floating-point arithmetic for ALU operation
CO3	Discuss about implementation schemes of control unit and pipeline performance
CO4	Explain the concept of various memories, interfacing and organization of multiple processors
CO5	Discuss parallel processing technique and unconventional architectures
R2017	EC8551 COMMUNICATION NETWORKS
CO1	Identify the components required to build different types of networks
CO2	Choose the required functionality at each layer for given application
CO3	Identify solution for each functionality at each layer
CO4	Trace the flow of information from one node to another node in the network
R2017	TOTAL QUALITY MANAGEMENT
CO1	The student would be able to apply the tools and techniques of quality management to manufacturing and servicesprocesses.

R2017	BASIC OF BIOMEDICAL INSTRUMENTATION
CO1	To Learn the different bio potential and its propagation.
CO2	To get Familiarize the different electrode placement for various physiological recording
CO3	Students will be able design bio amplifier for various physiological recording
CO4	Students will understand various technique non electrical physiogical measurements
CO5	Understand the different bio chemical measurements

R2017	EC8562 DIGITALSIGNAL PROCESSING LABORATORY
CO1	Carryout basic signal processing operations
CO2	Demonstrate their abilities towards MATLAB based implementation of various DSP systems
CO3	Analyze the architecture of a DSP Processor
CO4	Design and Implement the FIR and IIR Filters in DSP Processor for performing filtering operation over real-time signals
CO5	Design a DSP system for various applications of DSP

R2017	EC8561 COMMUNICATION SYSTEMS LABORATORY
CO1	Simulate &validate the various functional modules of a communication system
CO2	Demonstrate their knowledge in base band signaling schemes through implementation of digital modulation schemes
CO3	Apply various channel coding schemes & demonstrate their capabilities towards the improvement of the noise performance of communication system
CO4	Simulate end-to-end communication Link

R2017	EC8563 COMMUNICATION NETWORKS LABORATORY
CO1	Communicate between two desktop computers
CO2	Implement the different protocols
CO3	Program using sockets.
CO4	Implement and compare the various routing algorithms
CO5	Use the simulation tool.
R2017	**EC8691 MICROPROCESSORS AND MICRO CONTROLLERS**
CO1	Understand and execute programs based on 8086 microprocessor.
CO2	Design Memory Interfacing circuits.
CO3	Design and interface I/O circuits.
CO4	Design and implement 8051microcontroller based systems.

R2017	EC8095 VLSI DESIGN
CO1	Realize the concepts of digital building blocks using MOS transistor.
CO2	Design combinational MOS circuits and power strategies.
CO3	Design and construct Sequential Circuits and Timing systems.
CO4	Design arithmetic building blocks and memory sub systems.
CO5	Apply and implement FPGA design flow and testing.

R2017	EC8652 WIRELESS COMMUNICATION
CO1	Characterizeawirelesschannelandevolvethesystemdesignspecifications
CO2	Designacellularsystembasedonresourceavailabilityandtrafficdemands
CO3	Identify suitable signaling and multi path mitigation techniques for the wireless channel and system under consideration.

R2017	MG8591 PRINCIPLES OF MANAGEMENT
CO1	Managerial functions like planning, organizing, staffing, leading & controlling and have same basic knowledge on international aspect of management

R2017	EC8651 TRANSMISSION LINES AND RF SYSTEMS
CO1	Explain the characteristics of transmission lines and its losses
CO2	Write about the standing wave ratio and input impedance in high frequency transmission lines
CO3	Analyze impedance matching by stubs using smith charts
CO4	Analyze the characteristics of TE and TM waves
CO5	Design a RF transceiver system for wireless communication

R2017	EC8681 MICROPROCESSORS AND MICROCONTROLLERS LABORATORY
CO1	Write ALP Programmes for fixed and Floating Point and Arithmetic operations
CO2	Interface different I/O switch processor
CO3	Generate wave forms using Microprocessors
CO4	Execute Programs in 8051
CO5	Explain the difference between simulator and Emulator

R2017	EC8661 VLSI DESIGN LABORATORY
CO1	Write HDL code for basic as well as advanced digital integrated circuit
CO2	Import the logic modules in to FPGA Boards
CO3	Synthesize Place and Route the digital Ips
CO4	Design, Simulate and Extract the layouts of Digital & Analog IC Blocks using EDA tools

R2017	EC8701 ANTENNAS AND MICROWAVE ENGINEERING
CO1	Apply the basic principles and evaluate antenna parameters and link power budgets
CO2	Design and assess the performance of various antennas
CO3	Design a microwave system given the application specifications

R2017	EC8751 OPTICAL COMMUNICATION
CO1	Realize basic elements in optical fibers, different modes and configurations.
CO2	Analyze the transmission characteristics associated with dispersion and polarization techniques.
CO3	Design optical sources and detectors with their use in optical communication system.
CO4	Construct fiber optic receiver systems, measurements and coupling techniques.
CO5	Design optical communication systems and its networks.

R2017	EC8791 EMBEDDED AND REALTIME SYSTEMS
CO1	Describe the architecture and programming of ARM processor
CO2	Outline the concepts of embedded systems
CO3	Explain the basic concepts of real time operating system design
CO4	Model real-time applications using embedded-system concepts

R2017	EC8702 ADHOC AND WIRELESS SENSOR NETWORKS
CO1	Know the basics of Adhoc networks and Wireless Sensor Networks
CO2	Apply this knowledge to identify the suitable routing algorithm based on the network and user requirement
CO3	Apply the knowledge to identify appropriate physical and MAC layer protocols
CO4	Understand the transport layer and security issues possible in Adhoc and sensor networks.
CO5	Be familiar with the OS used in Wireless Sensor Networks and build basic modules

R2017	EC8711 EMBEDDED LABORATORY
CO1	Write programs in ARM for a specific Application
CO2	Interface memory, A/D and D/A convertors with ARM system
CO3	Analyze the performance of interrupt
CO4	Write program for interfacing keyboard, display, motor and sensor.
CO5	Formulate a mini project using embedded system

R2017	EC8761 ADVANCED COMMUNICATION LABORATORY
CO1	Analyze the performance of simple optical link by measurement of losses and Analyzing the mode characteristics of fiber
CO2	Analyze the Eye Pattern, Pulse broadening of optical fiber and the impact on BER
CO3	Estimate the Wireless Channel Characteristics and Analyze the performance of Wireless Communication System
CO4	Understand the intricacies in Microwave System design

COURSE OUTCOMES FOR B.E MECHANICAL ENGINEERING

COURSEOUTCOMES

	I SEMESTER				
R2017	**HS8151 COMMUNICATIVE ENGLISH**	**L**	**T**	**P**	**C**
		4	**0**	**0**	**4**
CO1	Read articles of a general kind in magazines and news papers.				
CO2	Participate effectivelyininformalconversations;introducethemselvesandtheirfriendsandexpressopinionsi				
CO3	Comprehend conversations and short talks delivered in English				
CO4	Write short essays of a general kind and personal letters and emails in English.				
R2017	**MA8151 ENGINEERING MATHEMATICS– I**	**L**	**T**	**P**	**C**
		4	**0**	**0**	**4**
CO1	Useboththeli mitdefinitionandrulesofdifferentiationtodifferentiatefunctions.				
CO2	Apply differentiation to solve maxima and minima problems.				
CO3	Evaluate integralsbothbyusingRiemannsumsandbyusingtheFundamentalTheoremofCalculus.				
CO4	Apply integration to compute multiple integrals, area, volume, integrals in polar coordinates, in addition to change of order and change of variables.				
CO5	Evaluate integrals using techniques of integration, such as substitution, partial fractions and integration by parts.				
CO6	Determineconvergence/divergenceofimproperintegralsandevaluateconvergentimproperintegrals.				
CO7	Apply various techniques in solving differential equations.				
R2017	**PH8151 ENGINEERING PHYSICS**	**L**	**T**	**P**	**C**
		3	**0**	**0**	**3**
CO1	The students will gain knowledge on the basics of properties of matter and its applications				
CO2	The students will acquire knowledge on the concepts of waves and optical devices and their applications in fibreoptics,				
CO3	The students will have adequate knowledge on the concepts of thermal properties of materials and their applications in expansion joints and heat exchangers,				
CO4	The students will get knowledge on advanced physics concepts of quantum theory and its applications in tunneling microscopes				
CO5	The students will understand the basics of crystals, their structures and different crystal growth techniques.				
R2017	**CY8151 ENGINEERING CHEMISTRY**	**L**	**T**	**P**	**C**
		0	**0**	**4**	**2**
CO1	The knowledge gained on engineering materials, fuels, energy sources and water treatment techniques will facilitate better understanding of engineering processes and applications for further learning.				

R2017	GE8151 PROBLEMSOLVING AND PYTHON PROGRAMMING	L	T	P	C
		3	0	0	3
CO1	Develop algorithmic solutions to simple computational problems				
CO2	Read, write, execute by hand simple Python programs.				
CO3	Structure simple Python programs for solving problems.				
CO4	Decomposea Python program into functions				
CO5	Represent compound data using Pythonlists, tuples, dictionaries				
CO6	Read and write data from/to filesin Python Programs.				

R2017	GE8152 ENGINEERING GRAPHICS	L	T	P	C
		2	0	4	4
CO1	Familiarize with the fundamentals and standards of Engineering graphics				
CO2	Perform Freeh and sketching of basic geometrical constructions and multiple views of objects.				
CO3	Project orthographic projections of lines and plane surfaces.				
CO4	Draw projections and solids and development of surfaces.				
CO5	Visualizeandtoprojectisometricandperspectivesectionsofsimplesolids.				

R2017	GE8161PROBLEMSOLVINGANDPYTHONPROGRAMMINGLABORATORY	L	T	P	C
		4	0	0	4
CO1	Write, test, and debug simple Python programs.				
CO2	Implement Python programs with conditionals and loops.				
CO3	Develop Python programs step-wise by defining functions and calling them.				
CO4	Use Python lists, tuples, dictionaries for representing compound data.				
CO5	Read and write data from/to files in Python.				

R2017	BS8161PHYSICSANDCHEMISTRYLABORATORY	L	T	P	C
		4	0	0	4
CO1	Apply principles of elasticity, optics and thermal properties for engineering applications.				
CO2	The students will be outfitted with hands-on knowledge in the quantitative chemical analysis Of water quality related parameters.				

II SEMESTER					
R2017	**HS8251 TECHNICAL ENGLISH**	**L**	**T**	**P**	**C**
		4	**0**	**0**	**4**
CO1	Read technical texts and write area- specific texts effortlessly.				
CO2	Listen and comprehend lectures and talks in their area of specialisation successfully.				
CO3	Speak appropriately and effectively in varied formal and informal contexts.				
CO4	Write reports and winning job applications.				
R2017	**MA8251 ENGINEERING MATHEMATICS – II**	**L**	**T**	**P**	**C**
		4	**0**	**0**	**4**
CO1	Eigenvalues and eigenvectors, diagonalization of a matrix, Symmetric matrices, Positive definite matrices and similar matrices.				
CO2	Gradient, divergence and curl of a vector point function and related identities.				
CO3	Evaluation of line, surface and volume integrals using Gauss, Stokes and Green's theorems and their verification.				
CO4	Analytic functions, conformal mapping and complex integration.				
CO5	Laplace transform and inverse transform of simple functions, properties, various related theorems and application to differential equations with constant coefficients				

R2017	**PH8251 MATERIALS SCIENCE**	**L**	**T**	**P**	**C**
		3	**0**	**0**	**3**
CO1	The students will have knowledge on the various phase diagrams and their applications				
CO2	The students will acquire knowledge on Fe-Fe C phase diagram,various microstructures and alloys				
CO3	The students will get knowledge on mechanical properties of materials and their measurement				
CO4	The students will gain knowledge on magnetic, dielectric and superconducting properties of				
CO5	The students will understand the basics of ceramics, composites and nanomaterials.				

R2017	**BE8252 BASIC ELECTRICAL, ELECTRONICS AND INSTRUMENTATION ENGINEERING**	**L**	**T**	**P**	**C**
		3	**0**	**0**	**3**
CO1	Understand electric circuits and working principles of electrical machines				
CO2	Understand the concepts of various electronic devices				
CO3	Choose appropriate instruments for electrical measurement for a specific application				

R2017	GE8291ENVIRONMENTAL SCIENCE AND ENGINEERING	L	T	P	C
		3	0	0	3
CO1	Environmental Pollution or problems cannot be solved by mere laws. Public participation is an important aspect which serves the environmental Protection. One will obtain knowledge on the following after completing the course.				
CO2	Public awareness of environmental is at infant stage.				
CO3	Ignorance and incomplete knowledge has lead to misconceptions				
CO4	Development and improvement in std. of living has lead to serious environmental disasters				

R2017	GE8292 ENGINEERING MECHANICS	L	T	P	C
		3	2	0	4
CO1	Illustrate the vectorial and scalar representation of forces and moments				
CO2	Analyse the rigid body in equilibrium				
CO3	Evaluate the properties of surfaces and solids				
CO4	Calculate dynamic forces exerted in rigid body				
CO5	Determine the friction and the effects by the laws of friction				

R2017	GE8261 ENGINEERING PRACTICES LABORATORY	L	T	P	C
		0	0	4	2
CO1	Fabricate carpentry components and pipe connections including plumbing works.				
CO2	Use welding equipments to join the structures.				
CO3	Carry out the basic machining operations				
CO4	Make the models using sheet metal works				
CO5	Illustrate on centrifugal pump, Air conditioner, operations of smithy, foundary and fittings				
CO 6	Carry out basic home electrical works and appliances				
CO 7	Measure the electrical quantities				
CO 8	Elaborate on the components, gates, soldering practices.				
R2017	BE8261 BASIC ELECTRICAL, ELECTRONICS AND INSTRUMENTATION ENGINEERING LABORATORY	L	T	P	C
		0	0	4	2
CO1	Ability to determine the speed characteristic of different electrical machines				
CO2	Ability to design simple circuits involving diodes and transistors				
CO3	Ability to use operational amplifiers				

III SEMESTER					
R2017	**MA8353 TRANSFORMS AND PARTIAL DIFFERENTIAL EQUATIONS**	**L**	**T**	**P**	**C**
		4	**0**	**0**	**4**
CO1	Understand how to solve the given standard partial differential equations.				
CO2	Solve differential equations using Fourier series analysis which plays a vital role in engineering applications.				
CO3	Appreciate the physical significance of Fourier series techniques in solving one and two dimensional heat flow problems and one dimensional wave equations.				
CO4	Understand the mathematical principles on transforms and partial differential equations would provide them the ability to formulate and solve some of the physical problems of				
CO5	Use the effective mathematical tools for the solutions of partial differential equations by using Z transform techniques for discrete time systems.				
R2017	**ME8391 ENGINEERING THERMODYNAMICS**	**L**	**T**	**P**	**C**
		3	**2**	**0**	**4**
CO1	Apply the first law of thermodynamics for simple open and closed systems under steady and unsteady conditions.				
CO2	Apply second law of thermodynamics to open and closed systems and calculate entropy and				
CO3	Apply Rankine cycle to steam power plant and compare few cycle improvement methods				
CO4	Derive simple thermodynamic relations of ideal and real gases				
CO5	Calculate the properties of gas mixtures and moist air and its use in psychometric processes.				
R2017	**CE8394 FLUID MECHANICS AND MACHINERY**	**L**	**T**	**P**	**C**
		4	**0**	**0**	**4**
CO1	Apply mathematical knowledge to predict the properties and characteristics of a fluid.				
CO2	Can analyse and calculate major and minor losses associated with pipe flow in piping				
CO3	Can mathematically predict the nature of physical quantities				
CO4	Can critically analyse the performance of pumps				
CO5	Can critically analyse the performance of turbines.				
R2017	**ME8351MANUFACTURING TECHNOLOGY – I**	**L**	**T**	**P**	**C**
		3	**0**	**0**	**3**
CO1	Explain different metal casting processes, associated defects, merits and demerits				
CO2	Compare different metal joining processes.				
CO3	Summarize various hot working and cold working methods of metals.				
CO4	Explain various sheet metal making processes.				
CO5	Distinguish various methods of manufacturing plastic components.				

R2017	**EE8353 ELECTRICAL DRIVES AND CONTROLS**	**L**	**T**	**P**	**C**
		3	**0**	**0**	**3**
CO1	Upon Completion of this subject, the students can able to explain different types of electrical machines and their performance				
R2017	**ME8361 MANUFACTURING TECHNOLOGY LABORATORY – I**	**L**	**T**	**P**	**C**
		0	**0**	**4**	**2**
CO1	Demonstrate the safety precautions exercised in the mechanical workshop.				
CO2	Make the work piece as per given shape and size using Lathe.				
CO3	Join two metals using arc welding.				
CO4	Use sheet metal fabrication tools and make simple tray and funnel.				
CO5	Use different moulding tools, patterns and prepare sand moulds.				
R2017	**ME8381 COMPUTER AIDED MACHINE DRAWING**	**L**	**T**	**P**	**C**
		0	**0**	**4**	**2**
CO1	Follow the drawing standards, Fits and Tolerances				
CO2	Re-create part drawings, sectional views and assembly drawings as per standards				
R2017	**EE8361 ELECTRICAL ENGINEERING LABORATORY**	**L**	**T**	**P**	**C**
		0	**0**	**4**	**2**
CO1	Ability to perform speed characteristic of different electrical machine				
R2017	**HS8381 INTERPERSONAL SKILLS/LISTENING & SPEAKING**	**L**	**T**	**P**	**C**
		0	**0**	**2**	**1**
CO1	Listen and respond appropriately.				
CO2	Participate in group discussions				
CO3	Make effective presentations				
CO4	Participate confidently and appropriately in conversations both formal and informal				
IV SEMESTER					
R2017	**MA8452 STATISTICS AND NUMERICAL METHODS**	**L**	**T**	**P**	**C**
		4	**0**	**0**	**4**
CO1	Apply the concept of testing of hypothesis for small and large samples in real life problems.				
CO2	Apply the basic concepts of classifications of design of experiments in the field of				
CO3	Appreciate the numerical techniques of interpolation in various intervals and apply the numerical techniques of differentiation and integration for engineering problems.				
CO4	Understand the knowledge of various techniques and methods for solving first and second order ordinary differential equations.				
CO5	Solve the partial and ordinary differential equations with initial and boundary conditions by using certain techniques with engineering applications				

R2017	ME8492 KINEMATICS OF MACHINERY	L	T	P	C
		3	0	0	3
CO1	Discuss the basics of mechanism				
CO2	CO2 Calculate velocity and acceleration in simple mechanisms				
CO3	CO3 Develop CAM profiles				
CO4	CO4 Solve problems on gears and gear trains				
CO5	CO5 Examine friction in machine elements				
R2017	ME8451 MANUFACTURING TECHNOLOGY – II	L	T	P	C
		3	0	0	3
CO1	Explain the mechanism of material removal processes.				
CO2	Describe the constructional and operational features of centre lathe and other special purpose lathes.				
CO3	Describe the constructional and operational features of shaper, planner, milling, drilling, sawing and broaching machines.				
CO4	Explain the types of grinding and other super finishing processes apart from gear				
CO5	Summarize numerical control of machine tools and write a part program.				
R2017	ME8491 ENGINEERING METALLURGY	L	T	P	C
		3	0	0	3
CO1	Explain alloys and phase diagram, Iron-Iron carbon diagram and steel classification.				
CO2	Explain isothermal transformation, continuous cooling diagrams and different heat treatment				
CO3	Clarify the effect of alloying elements on ferrous and non-ferrous metals				
CO4	Summarize the properties and applications of non metallic materials.				
CO5	Explain the testing of mechanical properties.				
R2017	CE8395 STRENGTH OF MATERIALS FOR MECHANICAL ENGINEERS	L	T	P	C
		3	0	0	3
CO1	Understand the concepts of stress and strain in simple and compound bars, the importance of principal stresses and principal planes.				
CO2	Understand the load transferring mechanism in beams and stress distribution due to shearing force and bending moment.				
CO3	Apply basic equation of simple torsion in designing of shafts and helical spring				
CO4	Calculate the slope and deflection in beams using different methods.				
CO5	Analyze and design thin and thick shells for the applied internal and external pressures.				
R2017	ME8493 THERMAL ENGINEERING - I	L	T	P	C
		3	0	0	3
CO1	Apply thermodynamic concepts to different air standard cycles and solve problems.				
CO2	Solve problems in single stage and multistage air compressors				
CO3	Explain the functioning and features of IC engines, components and auxiliaries.				

CO4	Calculate performance parameters of IC Engines.				
CO5	Explain the flow in Gas turbines and solve problems.				
R2017	**ME8462 MANUFACTURING TECHNOLOGY LABORATORY – II**	**L**	**T**	**P**	**C**
		0	**0**	**4**	**2**
CO1	Use different machine tools to manufacturing gears				
CO2	Ability to use different machine tools to manufacturing gears.				
CO3	Ability to use different machine tools for finishing operations				
CO4	Ability to manufacture tools using cutter grinder				
CO5	Develop CNC part programming				
R2017	**CE8381 STRENGTH OF MATERIALS AND FLUID MECHANICS AND MACHINERY LABORATORY**	**L**	**T**	**P**	**C**
		0	**0**	**4**	**2**
CO1	Ability to perform Tension, Torsion, Hardness, Compression, and Deformation test on Solid				
R2017	**HS8461 ADVANCED READING AND WRITING**	**L**	**T**	**P**	**C**
		0	**0**	**2**	**1**
CO1	Write different types of essays.				
CO2	Write winning job applications.				
CO3	Read and evaluate texts critically.				
CO4	Display critical thinking in various professional contexts.				
V SEMESTER					
R2017	**ME8595 THERMAL ENGINEERING – II**	**L**	**T**	**P**	**C**
		3	**0**	**0**	**3**
CO1	Solve problems in Steam Nozzle				
CO2	Explain the functioning and features of different types of Boilers and auxiliaries and calculate performance parameters.				
CO3	Explain the flow in steam turbines, draw velocity diagrams for steam turbines and solve				
CO4	Summarize the concept of Cogeneration, Working features of Heat pumps and Heat				
CO5	Solve problems using refrigerant table / charts and psychrometric charts				
R2017	**ME8593 DESIGN OF MACHINE ELEMENTS**	**L**	**T**	**P**	**C**
		3	**0**	**0**	**3**
CO1	Explain the influence of steady and variable stresses in machine component design.				
CO2	Apply the concepts of design to shafts, keys and couplings.				
CO3	Apply the concepts of design to temporary and permanent joints.				
CO4	Apply the concepts of design to energy absorbing members, connecting rod and crank shaft.				
CO5	Apply the concepts of design to bearings.				

R2017	ME8501 METROLOGY AND MEASUREMENTS	L	T	P	C
		3	0	0	3
CO1	Describe the concepts of measurements to apply in various metrological instruments				
CO2	Outline the principles of linear and angular measurement tools used for industrial				
CO3	Explain the procedure for conducting computer aided inspection				
CO4	Demonstrate the techniques of form measurement used for industrial components				
CO5	Discuss various measuring techniques of mechanical properties in industrial				
R2017	ME8594 DYNAMICS OF MACHINES	L	T	P	C
		4	0	0	4
CO1	Calculate static and dynamic forces of mechanisms.				
CO2	Calculate the balancing masses and their locations of reciprocating and rotating masses.				
CO3	Compute the frequency of free vibration.				
CO4	Compute the frequency of forced vibration and damping coefficient.				
CO5	Calculate the speed and lift of the governor and estimate the gyroscopic effect on automobiles, ships and airplanes.				
R2017	ME8511 KINEMATICS AND DYNAMICS LABORATORY	L	T	P	C
		0	0	4	2
CO1	Explain gear parameters, kinematics of mechanisms, gyroscopic effect and working of lab equipments.				
CO2	Determine mass moment of inertia of mechanical element, governor effort and range sensitivity, natural frequency and damping coefficient, torsional frequency, critical speeds of shafts, balancing mass of rotating and reciprocating masses, and transmissibility ratio.				
R2017	ME8512 THERMAL ENGINEERING LABORATORY	L	T	P	C
		0	0	4	2
CO1	Conduct tests on heat conduction apparatus and evaluate thermal conductivity of materials.				
CO2	Conduct tests on natural and forced convective heat transfer apparatus and evaluate heat transfer coefficient.				
CO3	Conduct tests on radiative heat transfer apparatus and evaluate Stefan Boltzmann constant and emissivity.				
CO4	Conduct tests to evaluate the performance of parallel/counter flow heat exchanger apparatus and reciprocating air compressor.				
CO5	Conduct tests to evaluate the performance of refrigeration and air conditioning test rigs.				
R2017	ME8513 METROLOGY AND MEASUREMENTS LABORATORY	L	T	P	C
		0	0	4	2
CO1	Measure the gear tooth dimensions, angle using sine bar, straightness and flatness, thread parameters, temperature using thermocouple, force, displacement, torque and vibration.				
CO2	Calibrate the vernier, micrometer and slip gauges and setting up the comparator for the inspection.				

VI SEMESTER					
R2017	**ME8651 DESIGN OF TRANSMISSION SYSTEMS**	**L**	**T**	**P**	**C**
		3	**0**	**0**	**3**
CO1	Apply the concepts of design to belts, chains and rope drives.				
CO2	Apply the concepts of design to spur, helical gears.				
CO3	Apply the concepts of design to worm and bevel gears.				
CO4	Apply the concepts of design to gear boxes .				
CO5	Apply the concepts of design to cams, brakes and clutches				
R2017	**ME8691 COMPUTER AIDED DESIGN AND MANUFACTURING**	**L**	**T**	**P**	**C**
		3	**0**	**0**	**3**
CO1	Explain the 2D and 3D transformations, clipping algorithm, Manufacturing models and Metrics				
CO2	Explain the fundamentals of parametric curves, surfaces and Solids				
CO3	Summarize the different types of Standard systems used in CAD				
CO4	Apply NC & CNC programming concepts to develop part programme for Lathe & Milling				
CO5	Summarize the different types of techniques used in Cellular Manufacturing and FMS				
R2017	**ME8693 HEAT AND MASS TRANSFER**	**L**	**T**	**P**	**C**
		3	**2**	**0**	**4**
CO1	Apply heat conduction equations to different surface configurations under steady state and transient conditions and solve problems				
CO2	Apply free and forced convective heat transfer correlations to internal and external flows through/over various surface configurations and solve problems				
CO3	Explain the phenomena of boiling and condensation, apply LMTD and NTU methods of thermal analysis to different types of heat exchanger configurations and solve problems				
CO4	Explain basic laws for Radiation and apply these principles to radiative heat transfer between different types of surfaces to solve problems				
CO5	Apply diffusive and convective mass transfer equations and correlations to solve problems for different applications				
R2017	**ME8692 FINITE ELEMENT ANALYSIS**	**L**	**T**	**P**	**C**
		3	**0**	**0**	**3**
CO1	Summarize the basics of finite element formulation.				
CO2	Apply finite element formulations to solve one dimensional Problems.				
CO3	Apply finite element formulations to solve two dimensional scalar Problems.				
CO4	Apply finite element method to solve two dimensional Vector problems.				
CO5	Apply finite element method to solve problems on iso parametric element and dynamic Problems.				

R2017	ME8694 HYDRAULICS AND PNEUMATICS	L	T	P	C
		3	0	0	3
CO1	Explain the Fluid power and operation of different types of pumps.				
CO2	Summarize the features and functions of Hydraulic motors, actuators and Flow control valves				
CO3	Explain the different types of Hydraulic circuits and systems				
CO4	Explain the working of different pneumatic circuits and systems				
CO5	Summarize the various trouble shooting methods and applications of hydraulic and				
R2017	ME8681 CAD / CAM LABORATORY	L	T	P	C
		0	0	4	2
CO1	Draw 3D and Assembly drawing using CAD software				
CO2	Demonstrate manual part programming with G and M codes using CAM				
R2017	ME8682 DESIGN AND FABRICATION PROJECT	L	T	P	C
		0	0	4	2
CO1	Design and Fabricate the machine element or the mechanical product.				
CO2	Demonstrate the working model of the machine element or the mechanical product.				
R2017	HS8581 PROFESSIONAL COMMUNICATION	L	T	P	C
		0	0	2	1
CO1	Make effective presentations				
CO2	Participate confidently in Group Discussions.				
CO3	Attend job interviews and be successful in them.				
CO4	Develop adequate Soft Skills required for the workplace				
VII SEMESTER					
R2017	ME8792 POWER PLANT ENGINEERING	L	T	P	C
		3	0	0	3
CO1	Explain the layout, construction and working of the components inside a thermal power plant.				
CO2	Explain the layout, construction and working of the components inside a Diesel, Gas and Combined cycle power plants.				
CO3	Explain the layout, construction and working of the components inside nuclear power plants.				
CO4	Explain the layout, construction and working of the components inside Renewable energy power plants				
CO5	Explain the applications of power plants while extend their knowledge to power plant economics and environmental hazards and estimate the costs of electrical energy production.				

R2017	ME8793 PROCESS PLANNING AND COST ESTIMATION	L	T	P	C
		3	0	0	3
CO1	Select the process, equipment and tools for various industrial products.				
CO2	Prepare process planning activity chart.				
CO3	Explain the concept of cost estimation.				
CO4	Compute the job order cost for different type of shop floor.				
CO5	Calculate the machining time for various machining operations.				

R2017	ME8791 MECHATRONICS	L	T	P	C
		3	0	0	3
CO1	Discuss the interdisciplinary applications of Electronics, Electrical, Mechanical and Computer Systems for the Control of Mechanical, Electronic Systems and sensor technology.				
CO2	Discuss the architecture of Microprocessor and Microcontroller, Pin Diagram, Addressing Modes of Microprocessor and Microcontroller.				
CO3	Discuss Programmable Peripheral Interface, Architecture of 8255 PPI, and various device interfacing				
CO4	Explain the architecture, programming and application of programmable logic controllers to problems and challenges in the areas of Mechatronic engineering.				
CO5	Discuss various Actuators and Mechatronics system using the knowledge and skills acquired through the course and also from the given case studies				
R2017	ME8711 SIMULATION AND ANALYSIS LABORATORY	L	T	P	C
		0	0	4	2
CO1	Simulate the working principle of air conditioning system, hydraulic and pneumatic cylinder and cam follower mechanisms using matlab.				
CO2	Analyze the stresses and strains induced in plates, brackets and beams and heat transfer				
CO3	Calculate the natural frequency and mode shape analysis of 2d components and beams.				
R2017	ME8781 MECHATRONICS LABORATORY	L	T	P	C
		0	0	4	2
CO1	Demonstrate the functioning of mechatronics system with various pneumatic, hydraulic and electrical systems.				
CO2	Demonstrate the functioning of control systems with the help of PLC and microcontrollers.				

VIII SEMESTER

R2017	MG8591 PRINCIPLES OF MANAGEMENT	L	T	P	C
		3	0	0	3
CO1	Upon completion of the course, students will be able to have clear understanding of managerial functions like planning, organizing, staffing, leading & controlling and have same basic knowledge on international aspect of management				

R2017	ME8811 PROJECT WORK	L	T	P	C
		0	0	2	1
CO1	On Completion of the project work students will be in a position to take up any challenging practical problems and find solution by formulating proper methodology.				

R2017	ME8091 AUTOMOBILE ENGINEERING	L	T	P	C
		3	0	0	3
CO1	Recognize the various parts of the automobile and their functions and materials.				
CO2	Discuss the engine auxiliary systems and engine emission control.				
CO3	Distinguish the working of different types of transmission systems.				
CO4	Explain the Steering, Brakes and Suspension Systems.				
CO5	Predict possible alternate sources of energy for IC Engines.				

PROGRAMME OUTCOMES

S.NO.	PROGRAM OUTCOMES POs
1.	Engineering knowledge: Apply the knowledge of mathematics, science, engineering fundamentals and an engineering specialization to the solution of complex engineering problems.
2.	Problem analysis: Identify, formulate, review research literature, and analyze complex engineering problems reaching substantiated conclusions using first principles of mathematics, natural sciences, and engineering sciences.
3.	Design/development of solutions: Design solutions for complex engineering problems and design system components or processes that meet the specified needs with appropriate consideration for the public health and safety, and the cultural, societal, and environmental considerations
4.	Conduct investigations of complex problems: Use research-based knowledge and research methods including design of experiments, analysis and interpretation of data, and synthesis of the information to provide valid conclusions.
5.	Modern tool usage: Create, select, and apply appropriate techniques, resources, and modern engineering and IT tools including prediction and modeling to complex engineering activities with an understanding of the limitations.
6.	The engineer and society: Apply reasoning informed by the contextual knowledge to assess societal, health, safety, legal and cultural issues and the consequent responsibilities relevant to the professional engineering practice.
7.	Environment and sustainability: Understand the impact of the professional engineering solutions in societal and environmental contexts, and demonstrate the knowledge of, and need for sustainable development.
8.	Ethics: Apply ethical principles and commit to professional ethics and responsibilities and norms of the engineering practice.
9.	Individual and team work: Function effectively as an individual, and as a member or leader in diverse teams, and in multidisciplinary settings.
10.	Communication: Communicate effectively on complex engineering activities with the engineering community and with society at large, such as, being able to comprehend and write effective reports and design documentation, make effective presentations, and give and receive clear instructions.
11.	Project management and finance: Demonstrate knowledge and understanding of the engineering and management principles and apply these to one‘s own work, as a member and leader in a team, to manage projects and in multidisciplinary environments.
12.	Life-long learning: Recognize the need for, and have the preparation and ability to engage in independent and life-long learning in the broadest context of technological change.

DEPARTMENT OF COMPUTER SCIENCE AND ENGINEERING
PROGRAM SPECIFIC OUTCOMES (PSOs)

S.NO.	PROGRAM SPECIFIC OBJECTIVES (PSOs)
1.	To analyze, design and develop computing solutions by applying foundational concepts of Computer Science and Engineering.
2.	To apply software engineering principles and practices for developing quality software for scientific and business applications.
3.	To adapt to emerging Information and Communication Technologies (ICT) to innovate ideas and solutions to existing/novel problems

DEPARTMENT OF ELECTRICAL AND ELECTRONICS ENGINEERING
PROGRAM SPECIFIC OUTCOMES (PSOs)

S.NO.	PROGRAM SPECIFIC OBJECTIVES (PSOs)
1.	Capable to acquire knowledge on use of modern engineering tools and equipments to analyze problems necessary for electrical engineering practice
2.	Providing engineers with contemporary knowledge about electrical engineering and skills needed to fulfill the needs of society.
3.	Apply the fundamental knowledge of mathematics, science, electrical and electronics engineering to analyse and solve the complex problems in electrical, electronics and allied interdisciplinary areas.

DEPARTMENT OF ELECTRONICS AND COMMUNICATION ENGINEERING
PROGRAM SPECIFIC OUTCOMES (PSOs)

S.NO	PROGRAM SPECIFIC OBJECTIVES (PSOs)
1.	To analyze, design and develop solutions by applying foundational concepts of electronics and communication engineering.
2.	To apply design principles and best practices for developing quality products for scientific and business applications.
3.	To adapt to emerging information and communication technologies (ICT) to innovate ideas and solutions to existing/novel problems.

DEPARTMENT OF MECHANICAL ENGINEERING

PROGRAM SPECIFIC OUTCOMES (PSOs)

S.NO.	PROGRAM SPECIFIC OBJECTIVES (PSOs)
1.	Analyse specific engineering problems relevant to Mechanical Engineering by applying the knowledge of basic sciences, engineering mathematics and engineering fundamentals.
2.	Design, develop; manufacture and test the society needed products / processes using the significant analytical knowledge in Mechanical Engineering by applying modern tools.
3.	Apply the contextual knowledge of Mechanical Engineering to assess societal, environmental, health, safety, legal and cultural issues with professional ethics and function effectively as an individual or a leader in a team to manage different projects in multidisciplinary environments as the process of life-long learning.