

**NAWAB SHAH ALAM KHAN COLLEGE OF ENGINEERING & TECHNOLOGY  
NEW MALAKPET, HYDERABAD**

**DEPARTMENT OF COMPUTER SCIENCE AND ENGINEERING**

Year	Semester	Regulation	Course Code	Course Name	Course Output
I	I	R 16	PH103BS	APPLIED PHYSICS	After crowning glory of this path the pupil is able to
					Pupil can recognize the importance of mild phenomena in skinny movies and backbone.
					Capable of look at precept, operating of diverse laser structures and slight propagation via optical fibers.
					Distinguish diverse crystal systems and apprehend atomic packing element.
					They understand the numerous defects in crystals
I	I	R 16	MA101BS	MATHEMATICS I	After gaining knowledge of this course student must be able to
					Write the matrix illustration of a hard and fast of linear equations and to investigate the answer of the gadget of equations.
					Find the proper values and proper vectors which encounter below linear ameliorations
					Discover the intense values of features of variables with/ without constraints.
					Capable of become aware of whether or not the given first order de is exact or no longer, capable clear up higher order and follow them for fixing some real international troubles
I	I	R 16	CH102BS	ENGINEERING CHEMISTRY	People will exhibit an intensity of expertise and observe the strategies of inquiry in a discipline of their choosing, and they will display a breath of expertise throughout their choice of varied disciplines.
					Student will reveal the potential to get admission to and interpret data, reply and adapt to changing conditions, make complicated decision,clear up problem and examine actions.
					Scholar will show attention and knowledge of the competencies important to live and paintings in a various engineering international.
					College students will benefit the easy expertise of electrochemical techniques associated with corrosion and it does manage.
					A person apprehends the easy houses of water and its usage in home and commercial functions.
					Pupil can learn the usage of vital standards to make predictions approximately the overall houses of substances.
					Pupil can predict capability packages of chemistry and sensible utility an excellent way to emerge as correct engineers and marketers
I	I	R 16	EN104HS	PROFESSIONAL COMMUNICATION IN ENGLISH	Use English language effectively in spoken and written forms.
					Comprehend the given texts and reply appropriately.
					Talk with a bit of luck in formal and casual contexts.
					Enrichment of comprehension and fluency.
					Gaining confidence in using language
					Communicate confidently in formal and informal contexts
I	I	R 16	ME105ES	ENGINEERING MECHANICS	Student get without troubles recognize the resolving forces and moments for a given pressure gadget.
					Scholar does an analyzation at the types of friction for shifting our bodies and troubles related to friction.
					Similarly they do decide the centroid and 2nd second of place.
					Determine resultant of forces acting on a body and analyses equilibrium of a frame subjected to a machine of forces.
					Solve trouble of bodies subjected to friction.
					Locate the vicinity of centroid and calculate second of inertia of a given phase.
					Apprehend the kinetics and kinematics of a body undergoing rectilinear, curvilinear, rotatory movement and inflexible frame movement.
					Solve issues the use of work power equations for translation, constant axis rotation and plane motion and resolve issues of vibration.
I	I	R 16	EE106ES	BASIC ELECTRICAL AND ELECTRONICS ENGINEERING	After this route, the scholar might be able
					To research and clear up troubles of electrical circuits the use of community laws and theorems.
					To discover and signify diodes and diverse kinds of transistors.
					This course introduce the concept of basic electrical engineering parameters ,quantities ,analysis of AC and DC circuits ,the construction operation and analysis of transformer DC and AC machines .

					It also gives knowledge about measuring instruments operation in detail.
					It introduce also about network analysis.
I	I	R 16	EN107HS	ENGLISH LANGUAGE COMMUNICATION SKILLS LAB	College students might be capable of better apprehend of nuances of English language thru audio- visual enjoy and institution activities.
					Neutralization of accent for intelligibility
					They get an potential of speak me competencies with readability and confidence which in flip complements their employability abilities
I	I	R 16	ME108ES	ENGINEERING WORKSHOP	Observe and practice on system tools and their operations.
					They do exercise on production of components the use of workshop trades which include plumbing, becoming, carpentry, foundry, residence wiring and welding.
					They get information to pick out and practice suitable gear for one of kind trades of engineering tactics along with drilling, cloth disposing of, measuring, and chiseling.
					Practice the fundamental electric engineering expertise for residence wiring and get a potential to do practice on it.
I	II	R 16	PH201BS	ENGINEERING PHYSICS II	After completion of this course the student is able to realize the importance of behavior of a particle quantum mechanically.
					Learn concentration estimation of charge carriers in semi-conductors.
					Learn various magnetic dielectric properties and apply them in engineering applications.
					Know the basic principles and applications of super conductors.
I	II	R 16	MA202BS	MATHEMATICS II	After learning the contents of this course the student must be able to
					Use Laplace transform techniques for solving DE's
					Evaluate integrals using Beta and Gamma functions
					Evaluate the multiple integrals and can apply these concepts to find areas, volumes, moment of inertia etc. of regions on a plane or in space.
					Evaluate the line, surface and volume integrals and converting them from one to another
I	II	R 16	MA203BS	MATHEMATICS III	After learning the contents of this course the student must be able to
					They can able to differentiate among random variables involved in the probability models which are useful for all branches of engineering
					They get knowledge to do calculation on mean, proportions and variances of sampling distributions and to make important decisions s for few samples which are taken from a large data.
					With the gained knowledge they can solve the tests of ANOVA for classified data
					They do get an ability of finding the root of a given equation and solution of a system equations and fit a curve for a given data
					Student can able to find the numerical solutions for a given first order initial value problem.
I	II	R 16	ME205ES	ENGINEERING GRAPHICS	Ability to prepare working drawings to communicate the thoughts and data.
					Ability to examine, recognize and interpret engineering drawings.
					Potential to examine projections of normal solids – auxiliary perspectives.
					Capacity to study sections or sectional views of right ordinary solids
					These courses demonstrate the basic knowledge of computer hardware and software.

I	II	R 16	CS204ES	COMPUTER PROGRAMMING IN C	They gain knowledge and Able to write algorithms for solving problems.
					Ability to draw flowcharts for solving problems.
					Ability to code a given logic in C programming language.
					Gain knowledge in using C language for solving problems.
I	II	R 16	PH207BS	ENGINEERING PHYSICS LAB	The student is expected to learn from this laboratory course the concept of error and its analysis.
					It also allows the student to develop experimental skills to design new experiments in Engineering. With the exposure to these experiments the student can compare the theory and correlate with experiment.
					Student has an ability to understand LED and LASER sources.
					Student gain knowledge of Energy gap of a material of p-n junction.
					Student gets understand about Wave length of light and characteristics of a solar cell.
I	II	R 16	CH206BS	ENGINEERING CHEMISTRY LAB	The student is expected to learn from this laboratory course the concept of error and its analysis.
					It also allows the student to develop experimental skills to design new experiments in Engineering. With the exposure to these experiments the student can compare the theory and correlate with experiment.
					He is able do instrumental methods on colorimetry, conductometry, and potentiometer.
					Student has an ability to prepare aspirin and Thiokol rubber.
					Student can able to do adsorption of acetic on charcoal.
I	II	R 16	CS208ES	COMPUTER PROGRAMMING LAB	Ability to design and test programs to solve mathematical and scientific problems.
					Ability to write structured programs using control structures and functions.
					Able to write program in C to solve the problem either mathematical or any other query.
					Get an ability to do implement linear data structure such as Lists,Stacks,and Queues.
					At the end of this course student can even able to implement programs and methods on simple searching and sorting.
II	I	R 16	MA301BS	MATHEMATICS IV	After gaining knowledge of the contents of this paper the scholar must be able to:
					examine the complex functions close to their analyticity, integration the use of Cauchy's fundamental theorem
					discover the Taylor's and Laurent's series growth of complicated functions
					The bilinear transformation
					Specific any periodic function in time period of sines and cosines
					Explicit a non-periodic characteristic as fundamental representation
					Analyze one dimensional wave and warmth equation
II	I	R 16	CS303ES	MATHEMATICAL FOUNDATIONS OF COMPUTER	Ability to apply mathematical logic to solve troubles.
					Apprehend sets, family members, features, and discrete structures.
					Capable of use logical notation to define and cause about essential mathematical concepts along with sets, family members, and functions.

				SCIENCE	<p>Capable of formulate problems and resolve recurrence family members.</p> <p>Able to version and solve actual-international problems the usage of graphs and trees.</p>
II	I	R 16	CS304ES	DIGITAL LOGIC DESIGN	<p>Able to apprehend number systems and codes.</p> <p>Able to solve Boolean expressions using minimization strategies.</p> <p>Capable of design the sequential and combinational circuits.</p> <p>Able to apply nation reduction strategies to resolve sequential circuits</p>
II	I	R 16	CS305ES	OBJECT ORIENTED PROGRAMMING THROUGH JAVA	<p>Capable of remedy actual global problems using oops techniques.</p> <p>Able to understand using abstract instructions.</p> <p>Capable of solve issues using java series framework and I/O training.</p> <p>Able to broaden multithreaded programs with synchronization.</p> <p>Capable of develop applets for internet applications.</p> <p>Able to design guide based totally packages</p>
II	I	R 16	CS302ES	DATA STRUCTURES THROUGH C++	<p>Able to identify the appropriate data structures and algorithms for solving real world problems.</p> <p>Able to implement various kinds of searching and sorting techniques.</p> <p>Able to implement data structures such as stacks, queues, Search trees, and hash tables to solve various computing problems.</p>
II	I	R 16	CS307ES	IT WORKSHOP	<p>Apply expertise for pc assembling and software set up.</p> <p>Potential a way to clear up the problem shooting troubles.</p> <p>observe the equipment for practice of PPT, documentation and budget sheet and many others</p>
II	I	R 16	CS308ES	OBJECT ORIENTED PROGRAMMING THROUGH JAVA LAB	<p>Capable of write programs for solving actual international issues the use of java series frame paintings.</p> <p>Capable of write packages using summary classes.</p> <p>Capable of write multithreaded packages.</p> <p>Able to write applications using swing controls in java</p>
II	I	R 16	CS306ES	DATA STRUCTURES THROUGH C++ LAB	<p>Able to identify the appropriate data structures and algorithms for solving real world problems.</p> <p>Able to implement various kinds of searching and sorting techniques.</p> <p>Able to implement data structures such as stacks, queues, Search trees, and hash tables to solve various computing problems.</p>
II	I	R 16	MC300ES	ENVIRONMENTAL SCIENCE AND TECHNOLOGY	<p>Based on this course, the Engineering graduate will understand /evaluate / develop technologies on the basis of ecological principles and environmental regulations which in turn help in sustainable development.</p> <p>Able to understand and find the importance of ecological balance for sustainable development.</p> <p>Gain the knowledge of developmental activities and mitigation measures</p> <p>Get understanding the environmental policies and rules regulations</p>
II	II	R 16	CS401BS	COMPUTER ORGANIZATION	<p>Able to apprehend the simple components and the layout of CPU, ALU and manage unit.</p> <p>Capability to understand memory hierarchy and its effect on computer cost/performance.</p> <p>Ability to understand the benefit of guidance degree parallelism and pipelining for high overall performance processor layout.</p>

					<p>Capability to recognize the preparation set, training codecs and addressing modes of 8086.</p> <p>Capacity to put in writing meeting language applications to resolve issues</p>
II	II	R 16	CS402ES	DATABASE MANAGEMENT SYSTEMS	<p>Demonstrate the basic elements of a relational database management system.</p> <p>Ability to identify the data models for relevant problems.</p> <p>Ability to design entity relationship model and convert entity relationship diagrams into RDBMS and formulate SQL queries on the data.</p> <p>Apply normalization for the development of application software</p>
II	II	R 16	CS403ES	OPERATING SYSTEMS	<p>Apply optimization techniques for the improvement of system performance.</p> <p>Ability to design and solve synchronization problems.</p> <p>Learn about minimization of turnaround time, waiting time and response time and also maximization of throughput by keeping CPU as busy as possible.</p> <p>Ability to change access controls to protect files.</p> <p>Ability to compare the different operating systems</p>
II	II	R 16	CS404ES	FORMAL LANGUAGES AND AUTOMATA THEORY	<p>Capable of understand the concept of summary machines and their electricity to apprehend the languages.</p> <p>Capable of hire finite kingdom machines for modeling and solving computing issues.</p> <p>Able to layout context unfastened grammars for formal languages.</p> <p>Able to distinguish among decidability and undesirability.</p> <p>Able to benefit skillability with mathematical gear and formal strategies.</p>
II	II	R 16	SM405MS	BUSINESS ECONOMICS AND FINANCIAL ANALYSIS	<p>The students will understand the various Forms of Business and the impact of economic variables on the Business.</p> <p>The Demand, Supply, Production, Cost, Market Structure, Pricing aspects are learnt.</p> <p>The Students can study the firm's financial position by analyzing the Financial Statements of a Company.</p>
II	II	R 16	CS406ES	COMPUTER ORGANIZATION LAB	<p>Implement common sense gates using nand and nor gates</p> <p>Design a complete adder using gates</p> <p>Layout and enforce the four:1 mux, 8:1 mux the usage of gates /ICS.</p> <p>Design and put in force a three to 8 decoder the use of gates</p> <p>Layout a four bit comparator using gates/IC</p> <p>Design and implement a four bit shift sign up the usage of flip flops</p> <p>Layout and put in force a decade counter</p>
II	II	R 16	CS407ES	DATABASE MANAGEMENT SYSTEMS LAB	<p>Ability to design and implement a database schema for given problem.</p> <p>Apply the normalization techniques for development of application software to realistic problems.</p> <p>Ability to formulate queries using SQL DML/DDI/DCL command</p> <p>Able to do Practicing DML commands DML commands are used to for managing data within schema objects. Some examples:SELECT – retrieve data from the a database,INSERT – insert data into a table,UPDATE – updates existing data within a table,DELETE – deletes all records from a table.</p>

II	II	R 16	CS408ES	OPERATING SYSTEMS LAB	Ability to develop application programs using system calls in UNIX.
					Ability to implement interprocess communication between two processes.
					Ability to design and solve synchronization problems.
					Ability to simulate and implement operating system concepts such as scheduling, deadlock management, file management, and memory management
II	II	R 16	MC400HS	GENDER SENSITIZATION LAB	College students may have advanced a higher records of critical issues associated with gender in current-day India.
					University college students may be sensitized to easy dimensions of the organic, dialogue of substances derived from studies, information, ordinary lifestyles, literature, and film. Sociological, mental and crook factors of gender.
					College students will benefit a finer draw close of the manner gender discrimination works in our society and a way to counter it.
					College students will acquire insight into the gendered department of labor and its relation to politics and economics.
					Women and men college students and professionals will be better prepared to art work and stay together as equals.
					College students will increase an enjoy of appreciation of ladies in all walks of life.
III	I	R 15	A50511	PRINCIPLES OF PROGRAMMING LANGUAGES	Ability to precise syntax and linguistics in formal notation.
					Ability to use appropriate programming paradigm for the applying.
					Gain data and comparison of the options programming languages
III	I	R 15	A50518	SOFTWARE ENGINEERING	Ability to spot the minimum necessities for the event of application.
					Ability to develop, maintain, efficient, reliable and price effective software solutions
					Ability to critically thinking and value assumptions and arguments.
III	I	R 15	A50514	COMPILER DESIGN	Ability to understand the design of a compiler given features of the languages.
					Ability to implement sensible aspects of automata theory.
					Gain Knowledge of powerful compiler generation tools.
III	I	R 15	A50510	OPERATING SYSTEMS	Apply optimization techniques for the improvement of system performance.
					Ability to understand the synchronous and asynchronous communication mechanisms in their respective OS.
					Learn about minimization of turnaround time, waiting time and response time and conjointly maximization of output with keeping central processor as busy as possible.
III	I	R 15	A50515	COMPUTER NETWORKS	Students ought to be perceive and explore the fundamentals of laptop Networks and numerous Protocols.
					He/She are going to be during a position to understand the globe Wide net ideas.
					Students are going to be during a position to deal a network and flow of information any he/she will perceive simply the ideas of network security, Mobile and unintentional networks.
III	I	R 15	A50589	OPERATING SYSTEMS LAB	The course objectives make sure the development of scholars applied skills in operative systems connected areas.
					Students willing data in writing software routines modules or implementing varied ideas of operating systems
III	I	R 15	A50587	COMPILER DESIGN LAB	By this laboratory, students will understand the practical approach of how a compiler works.
					This will enable him to work in the development phase of new computer languages in industry

III	I	R 15	A50018	Human Values and Professional Ethics	To help the students appreciate the essential complementarity between 'VALUES' and 'SKILLS' to ensure sustained happiness and prosperity which are the core aspirations of all human beings.
					To facilitate the development of a Holistic perspective among students towards life, profession and happiness, based on a correct understanding of the Human reality and the rest of Existence. Such a holistic perspective forms the basis of Value based living in a natural way.
					To highlight plausible implications of such a Holistic understanding in terms of ethical human conduct, trustful and mutually satisfying human behavior and mutually enriching interaction with Nature.
III	II	R 15	A60521	DISTRIBUTED SYSTEMS	Able to comprehend and design a new distributed system with the desired features.
					Able to start literature survey leading to further research in any subarea.
					Able to develop new distributed applications
III	II	R 15	A60522	INFORMATION SECURITY	Student will be able to understand basic cryptographic algorithms, message and web authentication and security issues
					Ability to identify information system requirements for both of them such as client and server.
					Ability to understand the current legal issues towards information security.
III	II	R 15	A60524	OBJECT ORIENTED ANALYSIS AND DESIGN	Graduate will able to take up the case studies and model it in different views with respect user demand like use case, logical, component and preparation and etc, and preparation of document of the project for the unified Library application.
III	II	R 15	A60525	SOFTWARE TESTING METHODOLOGIES	Ability to use the method of testing and varied methodologies in testing for developed computer code.
					Ability to put in writing take a look at cases for given computer code to check it before delivery to the client
III	II	R 15	A60010	MANAGERIAL ECONOMICS AND FINANCIAL ANALYSIS	At the top of the course, the scholar can perceive the market dynamics particularly, demand and provide, demand foretelling , physical property of demand and provide, rating ways and rating in numerous market structures. Gain AN insight into however production operate is disbursed
					to attain least value combination of inputs and price analysis
					Develop AN understanding of Analyse however capital budgeting choices square measure disbursed perceive the framework for each manual and computerized Accounting method
					savvy to analyse and interpret the money statements through ratio analysis
III	II	R 15	A60512	WEB TECHNOLOGIES	gain information of shopper aspect scripting, validation of forms and mythical
					being programming have understanding of server aspect scripting with PHP language have understanding of what's XML and the way to analyse and use XML Data with Java
					To introduce Server aspect programming with Java Servlets and JSP
III	II	R 15	A60591	CASE TOOLS and WEB TECHNOLOGIES LAB	Use LAMP Stack for web applications
					Use Tomcat Server for Servlets and JSPs
					Write simple applications with Technologies like HTML, Javascript, AJAX, PHP, Servlets and JSPs Connect to Database and get results
					Parse XML files using Java (DOM and SAX parsers)
III	II	R 15	A60086	ADVANCED COMMUNICATION SKILLS (ACS) LAB	Accomplishment of sound vocabulary and its correct use contextually.
					aptitude in Writing and felicity in written expression.
					increased job prospects
					Effective Speaking skills
IV	I	R 13	A70511	LINUX PROGRAMMING	Work with confidence in UNIX system atmosphere.
					Work with shell script to modify completely different tasks as UNIX system administration.
IV	I	R 13	A70530	DESIGN PATTERNS	Ability to know and apply common design patterns to progressive / repetitive development.
					Ability to spot acceptable patterns for style of given drawback.
IV	I	R 13	A70520	DATA WAREHOUSING AND DATA MINING	Student ought to be able to perceive why the data warehouse additionally to data systems.
					Ability to perform the preprocessing of data and apply mining techniques thereon.
					Ability to spot the association rules, classification and clusters in large data sets.
					Ability to resolve globe issues in business and scientific info exploitation data mining

IV	I	R 13	A70519	CLOUD COMPUTING	Ability to grasp the virtualization and cloud computing ideas.
IV	I	R 13	A70540	SOFTWARE PROJECT MANAGEMENT	Describe and verify the aim and importance of project management from the views of coming up with, trailing and completion of project.
					Compare and differentiate organization structures and project structures.
					Implement a project to manage project schedule, expenses and resources with the appliance of appropriate project management tools.
IV	I	R 13	A70533	INFORMATION RETRIEVAL SYSTEMS	Possess the power to store and retrieve matter documents mistreatment appropriate models.
					Possess the power to use the varied retrieval utilities for up search.
					Possess AN understanding of classification and press documents to improve area and time potency.
					Possess the talent to formulate SQL like queries for unstructured information. perceive problems in net search.
IV	I	R 13	A70596	LINUX PROGRAMMING LAB	Ability to know the UNIX system environment
					Ability to perform the file management and multiple tasks mistreatment shell scripts in UNIX system environment
IV	I	R 13	A70595	DATA WAREHOUSING AND MINING LAB	Ability to feature mining algorithms as a component to the exiting tools
					Ability to use mining techniques for realistic knowledge.
IV	II	R 13	A80014	MANAGEMENT SCIENCE	By the end of the course, the students are going to be in an exceedingly position to arrange associate degree organisational structure for a given context within the organisation
					perform production operations through examination
					perceive the markets, customers and competition higher and worth the given product suitably.
					guarantee quality for a given product or service
					arrange and management the time unit perform higher plan, schedule and management comes through saucy and CPM evolve a technique for a business or service organisation
IV	II	R 13	A80538	SEMANTIC WEB AND SOCIAL NETWORKS	Ability to know and data illustration for the linguistics web.
					Ability to form metaphysics
					Ability to make a blogs and social networks
IV	II	R 13	A80542	AD HOC AND SENSOR NETWORKS	Ability to grasp the construct of ad-hoc and sensing element networks.
					Ability to style and implement sensing element network protocols.
					Ability to line up and appraise measurements of protocol performance in sensing element networks.

**DEPARTMENT OF MECHANICAL ENGINEERING**

Year	Semester	Regulation	Course Code	Course Name	Course Outcomes
I-YEAR	I SEM	R16	MA101BS	MATHEMATICS-I	After learning the contents of this paper the student must be able to: 1. Solve linear system equation 2. Determine the Eigen values and vectors of a matrix 3. Determine the power series expansion of a function 4. Estimate the maxima and minima of multivariable functions 5. Solve any given first order ordinary differential equation 6. Solve any higher order linear ordinary differential equation with constant coefficients
I-YEAR	I SEM	R16	MA102BS	MATHEMATICS-II	After learning the contents of this paper the student must be able to: 1. Solve linear differential equations using Laplace transforms 2. Evaluate multiple integrals and improper integrals 3. Convert line integrals to area integrals 4. Convert surface integrals to volume integrals 5. Determine potential functions for irrotational force fields



I-YEAR	I SEM	R16	PH103BS	ENGINEERING PHYSICS	After learning the contents of this paper the student must be able to: 1. Solve engineering problems using the concepts of wave and particle nature of radiant energy 2. Understand the use of lasers as light sources for low and high energy applications 3. Understand the nature and characterization of acoustic design, nuclear accelerators and new materials 4. Apply the concepts of light in optical fibers, light wave communication systems, and holography and for sensing physical parameters 5. Construct a quantum mechanical model to explain the behaviour of a system at microscopic level
I-YEAR	I SEM	R16	CS104ES	COMPUTER PROGRAMMING IN C	After learning the contents of this paper the student must be able to: 1. Develop algorithms for mathematical and scientific problems 2. Explore alternate algorithmic approaches to problem solving 3. Understand the components of computing systems 4. Choose data types and structures to solve mathematical and scientific problem 5. Develop modular programs using control structures 6. Write programs to solve real world problems using object oriented features
I-YEAR	I SEM	R16	ME105ES	ENGINEERING MECHANICS	After this course, the student will be able to: 1.Explain and predict physical phenomena and thus to lay the foundation for engineering application. 2.It support many subjects in manufacturing of various products and projections like missiles, launching rockets, radar communication structure, trusses, crane, elevator, conveyor belt, cargo ships, submarine.
I-YEAR	I SEM	R16	ME106ES	ENGINEERING GRAPHICS	After this course, the student will be able to: 1.Ability to prepare working drawings to communicate the ideas and information. 2.Ability to read, understand and interpret engineering drawings.
I-YEAR	I SEM	R16	PH107BS	ENGINEERING PHYSICS LAB	At the end of the course, the student will be able to: 1. Use CRO, signal generator, spectrometer, polarimeter and GM counter for making measurements 2. Test optical components using principles of interference and diffraction of light 3. Determine the selectivity parameters in electrical circuits 4. Determine the width of narrow slits, spacing between close rulings using lasers and appreciate the accuracy in measurements
I-YEAR	I SEM	R16	CS108ES	COMPUTER PROGRAMMING IN C LAB	After learning the contents of this paper the student must be able to: 1. Design and test programs to solve mathematical and scientific problems 2. Develop and test programs using control structures 3. Implement modular programs using functions 4. Develop programs using classes
I-YEAR	I SEM	R16	EA109MC	NSS	The main outcomes of National Service Scheme (NSS) being: Understanding the community in which they work Understanding themselves in relation to their community Identifying the needs and problems of the community and involving them in problem-solving Developing among themselves a sense of social and civic responsibility Utilising their knowledge in finding practical solutions to individual and community problems Developing competence required for group-living and sharing of responsibilities Gaining skills in mobilising community participation Acquiring leadership qualities and democratic attitudes Developing capacity to meet emergencies and natural disasters and practise national integration and social harmony
I-YEAR	II SEM	R16	AP201BS	APPLIED PHYSICS	After learning the contents of this paper the student must be able to: 1. Realize the importance of elastic behavior of materials. 2. Learn Sabine's formula for reverberation time and apply in architecture of buildings. 3. Learn various methods of producing ultrasonics and their uses. 4. Learn magnetic, dielectric and superconducting properties of materials and their applications.

I-YEAR	II SEM	R16	CH202BS	ENGINEERING CHEMISTRY	After learning the contents of this paper the student must be able to: 1. Students will gain the basic knowledge of electrochemical procedures related to corrosion and its control. 2. They can understand the basic properties of water and its usage in domestic and industrial purposes. 3. They learn the use of fundamental principles to make predictions about the general properties of materials. 4. They can predict potential applications of chemistry and practical utility in order to become good engineers and entrepreneurs
I-YEAR	II SEM	R16	MA203BS	MATHEMATICS - III	After learning the contents of this paper the student must be able to: 1. differentiate among random variables involved in the probability models which are useful for all branches of engineering 2. calculate mean, proportions and variances of sampling distributions and to make important decisions s for few samples which are taken from a large data 3. solve the tests of ANOVA for classified data 4. find the root of a given equation and solution of a system of equations 5. fit a curve for a given data 6. find the numerical solutions for a given first order initial value problem
I-YEAR	II SEM	R16	EN204HS	PROFESSIONAL COMMUNICATION IN ENGLISH	After learning the contents of this paper the student must be able to: 1. Use English Language effectively in spoken and written forms. 2. Comprehend the given texts and respond appropriately. 3. Communicate confidently in formal and informal contexts.
I-YEAR	II SEM	R16	EE205ES	BASIC ELECTRICAL AND ELECTRONICS ENGINEERING	After learning the contents of this paper the student must be able to: 1. To analyze and solve electrical circuits using network laws and theorems. 2. To identify and characterize diodes and various types of transistors.
I-YEAR	II SEM	R16	CH206BS	ENGINEERING CHEMISTRY LAB	After this course, the student will be able to: Students will be able to learn titrimetric, potentiometric, colorimetric procedures to analyzes acids, bases and preparation of polymers.
I-YEAR	II SEM	R16	EN207HS	ENGLISH LANGUAGE COMMUNICATION SKILLS LAB	After this course, the student will be able to: 1. Better understanding of nuances of English language through audio- visual experience and group activities 2. Neutralization of accent for intelligibility 3. Speaking skills with clarity and confidence which in turn enhances their employability skills.
I-YEAR	II SEM	R16	ME208ES	ENGINEERING WORKSHOP	At the end of the course, the student will be able to: 1. Study and practice on machine tools and their operations 2. Practice on manufacturing of components using workshop trades including plumbing, fitting, carpentry, foundry, house wiring and welding. 3. Identify and apply suitable tools for different trades of Engineering processes including drilling, material removing, measuring, chiseling. 4. Apply basic electrical engineering knowledge for house wiring practice.
I-YEAR	II SEM	R16	*EA209MC	NCCINSO	After learning the contents of this paper the student must be able to: NCC has adopted community development activities with the aim of imbibing amongst cadets selfless service to the community, dignity of labour importance of self help, need to protect the environment and to assist weaker sections of the society in their upliftment.
II YEAR	I SEM	R16	MA301BS	MATHEMATICS-IV	After learning the contents of this paper the student must be able to: 1. Analyze the complex functions with reference to their analyticity, integration using Cauchy's integral theorem 2. find the Taylor's and Laurent's series expansion of complex functions 3. The bilinear transformation 4. Express any periodic function in term of sines and cosines 5. Express a non-periodic function as integral representation 6. analyze one dimensional wave and heat equation
II YEAR	II SEM	R16	ME403ES	THERMODYNAMICS :	<ul style="list-style-type: none"> <li>At the end of the course, the student should be able to Understand and differentiate between different thermodynamic systems and processes.</li> <li>Understand and apply the laws of Thermodynamics to different types of systems undergoing various processes and to perform thermodynamic analysis.</li> <li>Understand and analyze the Thermodynamic cycles and evaluate performance parameters.</li> </ul>

II YEAR	I SEM	R16	MC300HS	GENDER SENSITIZATION LAB	<p>Students will have developed a better understanding of important issues related to gender in contemporary India.</p> <ul style="list-style-type: none"> <li>•Students will be sensitized to basic dimensions of the biological, sociological, psychological and legal aspects of gender. This will be achieved through discussion of materials derived from research, facts, everyday life, literature and film.</li> <li>•Students will attain a finer grasp of how gender discrimination works in our society and how to counter it.</li> <li>•Students will acquire insight into the gendered division of labour and its relation to politics and economics.</li> <li>•Men and women students and professionals will be better equipped to work and live together as equals.</li> <li>•Students will develop a sense of appreciation of women in all walks of life.</li> </ul>
II YEAR	I SEM	R16	ME302ES	KINEMATICS OF MACHINERY	<ul style="list-style-type: none"> <li>• The first course deals with mechanisms, their inversions straight line motion mechanisms steering mechanisms etc.</li> <li>• Also study of cams/gears &amp; gear trains &amp; belts are also introduced.</li> <li>• The main purpose is to give an idea about the relative motions obtained in all the above type of components used in mechanical Engineering.</li> </ul>
II YEAR	I SEM	R16	ME308ES	METALLURGY AND MATERIAL SCIENCE LAB	<ol style="list-style-type: none"> <li>1.The Primary focus of the Metallurgy and Material science program is to provide undergraduates with a fundamental knowledge based associated materials properties, and their selection and application.</li> <li>2.Upon graduation, students would have acquired and developed the necessary background and skills for successful careers in the materials-related industries.</li> <li>3.Furthermore, after completing the program, the student should be well prepared for management positions in industry or continued education toward a graduate degree.</li> </ol>
II YEAR	I SEM	R16	ME305ES	METALLURGY AND MATERIAL SCIENCE	<ul style="list-style-type: none"> <li>• Identify the properties of metals with respect to crystal structure and grain size.</li> <li>• Interpret the phase diagrams of materials</li> <li>• Classify and Distinguish different types of cast irons, steels and non ferrous alloys</li> <li>• Describe the concept of heat treatment of steels &amp; strengthening mechanisms</li> <li>• Explain the powder metallurgy process, types and manufacturing of composite materials.</li> </ul>
II YEAR	I SEM	R16	ME303ES	MECHANICS OF SOLIDS	<ul style="list-style-type: none"> <li>• Analyze the behavior of the solid bodies subjected to various types of loading;</li> <li>• Apply knowledge of materials and structural elements to the analysis of simple structures;</li> <li>• Undertake problem identification, formulation and solution using a range of analytical methods;</li> <li>• Analyze and interpret laboratory data relating to behavior of structures and the materials they are made of, and undertake associated laboratory work individually and in teams.</li> <li>• Expectation and capacity to undertake lifelong learning</li> </ul>
II YEAR	I SEM	R16	ME304ES	THERMODYNAMICS	<ol style="list-style-type: none"> <li>1.At the end of the course, the student should be able to Understand and differentiate between different thermodynamic systems and processes</li> <li>2.Understand and apply the laws of Thermodynamics to different types of systems undergoing various processes and to perform thermodynamic analysis.</li> <li>2.Understand and analyze the Thermodynamic cycles and evaluate performance parameters.</li> </ol>

II YEAR	I SEM	R16	ME307ES	MECHANICS OF SOLIDS LAB	<ol style="list-style-type: none"> <li>1. Analyze the behavior of the solid bodies subjected to various types of loading.</li> <li>2. Apply knowledge of materials and structural elements to the analysis of simple structures.</li> <li>3. Undertake problem identification, formulation and solution using a range of analytical methods</li> <li>4. Analyze and interpret laboratory data relating to behavior of structures and the materials they are made of, and undertake associated laboratory work individually and in teams.</li> <li>5. Expectation and capacity to undertake lifelong learning.</li> </ol>
II YEAR	II SEM	R16	SM405MS	BUSINESS ECONOMICS AND FINANCIAL ANALYSIS	<ul style="list-style-type: none"> <li>• The students will understand the various Forms of Business and the impact of economic variables on the Business.</li> <li>• The Demand, Supply, Production, Cost, Market Structure, Pricing aspects are learnt.</li> <li>• The Students can study the firm's financial position by analysing the Financial Statements of a Company</li> </ul>
II YEAR	II SEM	R16	ME403ES	DYNAMICS OF MACHINERY	<p>The idea is to introduce the concept of natural frequency and the importance of resonance and critical speeds.</p> <p>the study of DOM are necessary to have an idea while designing the various machine members like shafts, bearings, gears, belts &amp; chains and various I.C. Engine Components &amp; Machine tool parts</p>
II YEAR	II SEM	R16	MC400ES	ENVIRONMENTAL SCIENCE & TECHNOLOGY	<ul style="list-style-type: none"> <li>• Understand core concepts and methods from ecological and physical sciences and their application in environmental problem-solving.</li> <li>• Appreciate key concepts from economic, political, and social analysis as they pertain to the design and evaluation of environmental policies and institutions.</li> <li>• Appreciate the ethical, cross-cultural, and historical context of environmental issues and the links between human and natural systems.</li> <li>• Appreciate that one can apply systems concepts and methodologies to analyze and understand interactions between social and environmental processes.</li> <li>• Reflect critically about their roles and identities as citizens, consumers and environmental actors in a complex, interconnected world.</li> </ul>
II YEAR	II SEM	R16	ME407ES	FLUID MECHANICS AND HYDRAULIC MACHINES LAB	<ol style="list-style-type: none"> <li>1. Able to explain the effect of fluid properties on a flow system.</li> <li>2. Able to identify type of fluid flow patterns and describe continuity equation.</li> <li>3. To analyze a variety of practical fluid flow and measuring devices and utilize fluid mechanics principles in design.</li> <li>4. To select and analyze an appropriate turbine with reference to given situation in power plants.</li> <li>5. To estimate performance parameters of a given Centrifugal and Reciprocating pump.</li> <li>6. Able to demonstrate boundary layer concepts</li> </ol>
II YEAR	II SEM	R16	ME401ES	FLUID MECHANICS AND HYDRAULIC MACHINES	<ol style="list-style-type: none"> <li>1. Able to explain the effect of fluid properties on a flow system.</li> <li>2. Able to identify type of fluid flow patterns and describe continuity equation.</li> <li>3. To analyze a variety of practical fluid flow and measuring devices and utilize fluid Mechanics principles in design.</li> <li>4. To select and analyze an appropriate turbine with reference to given situation in Power plants.</li> <li>5. To estimate performance parameters of a given Centrifugal and Reciprocating pump.</li> <li>6. Able to demonstrate boundary layer concepts</li> </ol>
II YEAR	II SEM	R16	ME406ES	KINEMATICS AND DYNAMICS LAB	<ol style="list-style-type: none"> <li>1. Understand types of motion</li> <li>2. Analyze forces and torques of components in linkages</li> <li>3. Understand static and dynamic balance</li> <li>4. Understand forward and inverse kinematics of open-loop mechanisms</li> </ol>

II YEAR	II SEM	R16	ME404ES	MACHINE DRAWING	<ul style="list-style-type: none"> <li>•Preparation of engineering and working drawings with dimensions and bill of material during design and development. Developing assembly drawings using part drawings of machine components.</li> <li>•Conventional representation of materials, common machine elements and parts such as screws, nuts, bolts, keys, gears, webs, ribs.</li> <li>•Types of sections :- Selection of section planes and drawing of sections and auxiliary sectional views. Parts not usually sectioned.</li> <li>•Methods of dimensioning, general rules for sizes and placement of dimensions for holes, centers, curved and tapered features.</li> <li>•Title boxes, their size, location and details common abbreviations and their liberal usage</li> <li>•Types of Drawings working drawings for machine parts</li> </ul>
II YEAR	II SEM	R16	ME408ES	MANUFACTURING PROCESS LAB	<ol style="list-style-type: none"> <li>1.Understanding the properties of moulding sands and pattern making.</li> <li>2.Fabricate joints using gas welding and arc welding. Evaluate the quality of welded joints.</li> <li>3.Basic idea of press working tools and performs moulding studies on plastics.</li> </ol>
II YEAR	II SEM	R16	ME405ES	MANUFACTURING PROCESS	<ul style="list-style-type: none"> <li>• Understand the idea for selecting materials for patterns.</li> <li>• Types and allowances of patterns used in casting and analyze the components of moulds. Design core, core print and gating system in metal casting processes Understand arc, gas, solid state and resistance welding processes.</li> <li>• Develop process maps for metal forming processes using plasticity principles. Identify the effect of process variables to manufacture defect free products.</li> </ul>
II YEAR	I SEM	R15	A50318	ENGINEERING METROLOGY	<ol style="list-style-type: none"> <li>1.Students will able to understand various measuring standards and measurement methods.comuunicate ideas and information.</li> <li>2.Read,understand various inspection methods and techniques</li> <li>3.Students will gain Knowledge how a metrologist and inspector works and how to design ,use of various devices</li> <li>4.Understand how a quality controle department works</li> </ol>
III YEAR	I SEM	R15	A60330	FUNDAMENTALS OF MANAGEMENT	<ul style="list-style-type: none"> <li>• The students understand the significance of Management in their Profession. The various Management Functions like Planning, Organizing, Staffing, Leading, Motivation and Control aspects are learnt in this course.</li> <li>• The students can explore the Management Practices in their domain area.</li> </ul>
III YEAR	I SEM	R15	A503269	DESIGN OF MACHINE MEMBERS - I	<ol style="list-style-type: none"> <li>I. The student acquires the knowledge about the principles of design, material selection,component behavior subjected to loads, and criteria of failure.</li> <li>II. Understands the concepts of principal stresses, stress concentration in machine members and fatigue loading.</li> <li>III. Design on the basis of strength and rigidity and analyze the stresses and strains induced in a machine element.</li> </ol>
III YEAR	I SEM	R13	A50326	THERMAL ENGINEERING	<ul style="list-style-type: none"> <li>• At the end of the course, the student should be able to evaluate the performance of IC engines and compressors under the given operating conditions.</li> <li>• Apply the laws of Thermodynamics to evaluate the performance of Refrigeration and air-conditioning cycles.</li> <li>• Understand the functionality of the major components of the IC Engines and effects of operating conditions on their performance</li> </ul>
III YEAR	I SEM	R16	A50384	MT & MET LAB	<ol style="list-style-type: none"> <li>1.Understanding the properties of moulding sands and pattern making.</li> <li>2.Fabricate joints using gas welding and arc welding. Evaluate the quality of welded joints.</li> <li>3. Basic idea of press working tools and performs moulding studies on plastics.</li> </ol>
III YEAR	I SEM	R16	A50321	MACHINE TOOLS	<ol style="list-style-type: none"> <li>1.Understand the idea for selecting materials for patterns.</li> <li>2.Types and allowances of patterns used in casting and analyze the components of moulds. Design core, core print and gating system in metal casting processes</li> <li>3.Understand arc, gas, solid state and resistance welding processes.</li> <li>4.Develop process-maps for metal forming processes using plasticity principles.</li> <li>5.Identify the effect of process variables to manufacture defect free products.</li> </ol>

III YEAR	I SEM	R16	A5038463	METROLOGY AND MACHINE TOOLS	<ul style="list-style-type: none"> <li>• At the end of the course, the student would be able to</li> <li>• Identify techniques to minimize the errors in measurement.</li> <li>• Identify methods and devices for measurement of length, angle, gear &amp; thread</li> <li>• Parameters, surface roughness and geometric features of parts.</li> <li>• Understand working of lathe, shaper, and planer, drilling, milling and grinding machines.</li> <li>• Comprehend speed and feed mechanisms of machine tools.</li> <li>• Estimate machining times for machining operations on machine tools</li> </ul>
III YEAR	II SEM	R15	A60321	THERMAL ENGINEERING – II	<p>At the end of the course, the student should be able to</p> <ul style="list-style-type: none"> <li>• Develop state – space diagrams based on the schematic diagrams of process flow of steam and gas turbine plants.</li> <li>• Apply the laws of Thermodynamics to analyze thermodynamic cycles</li> <li>• Differentiate between vapour power cycles and gas power cycles</li> <li>• Infer from property charts and tables and to apply the data for the evaluation of performance parameters of the steam and gas turbine plants</li> <li>• Understand the functionality of major components of steam and gas turbine plants and to do the analysis of these components</li> </ul>
III YEAR	II SEM	R15	A60329	DESIGN OF MACHINE MEMBERS - II	<ul style="list-style-type: none"> <li>• Knowledge about journal bearing design using different empirical relations.</li> <li>• Estimation of life of rolling element bearings and their selection for given serviceconditions.</li> <li>• Acquaintance with design of the components as per the standard, recommended procedures which is essential in design and development of machinery in industry.</li> </ul>
III YEAR	II SEM	R15	A60338	PROFESSIONAL ETHICS	<ul style="list-style-type: none"> <li>• The students will understand the importance of Values and Ethics in their personal lives and professional careers.</li> <li>• The students will learn the rights and responsibilities as an employee, team member and a global citizen.</li> </ul>
III YEAR	II SEM	R13	A60331	HEAT TRANSFER	<p>At the end of this course, student will be able to</p> <ul style="list-style-type: none"> <li>• Understand the basic modes of heat transfer</li> <li>• Compute one dimensional steady state heat transfer with and without heat generation</li> <li>• Understand and analyze heat transfer through extended surfaces</li> <li>• Understand one dimensional transient conduction heat transfer</li> <li>• Understand concepts of continuity, momentum and energy equations</li> <li>• Interpret and analyze forced and free convective heat transfer</li> <li>• Understand the principles of boiling, condensation and radiation heat transfer</li> <li>• Design of heat exchangers using LMTD and NTU methods</li> </ul>
II YEAR	II SEM	R16	ME307EA	FINITE ELEMENT METHODS	<ul style="list-style-type: none"> <li>• At the end of the course, the student will be able to, Apply finite element method to solve problems in solid mechanics, fluid mechanics and heat transfer.</li> <li>• Formulate and solve problems in one dimensional structures including trusses, beams and frames.</li> <li>• Formulate FE characteristic equations for two dimensional elements and analyze plain stress,plain strain, axi-symmetric and plate bending problems.</li> <li>• Implement and solve the finite element formulations using MATLAB</li> </ul>
III YEAR	II SEM	R15	A60334	REFRIGERATION & AIR CONDITIONING	<ul style="list-style-type: none"> <li>• At the end of the course, the student should be able to Differentiate between different types of refrigeration systems with respect to application as well as conventional and unconventional refrigeration systems.</li> <li>• Thermodynamically analyse refrigeration and air conditioning systems and evaluate performance parameters.</li> <li>• Apply the principles of Psychometrics to design the air conditioning loads for the industrial applications.</li> </ul>

V YEAR	I SEM	R13	A70328	CAD/CAM	<ul style="list-style-type: none"> <li>• Understand geometric transformation techniques in CAD. Develop mathematical models to represent curves and surfaces .</li> <li>• Model engineering components using solid modeling techniques. Develop programs for CNC to manufacture industrial components.</li> <li>• To understand the application of computers in various aspects of Manufacturing viz., Design, Proper planning, Manufacturing cost, Layout &amp; Material Handling system.</li> </ul>
V YEAR	I SEM	R13	A70352	OPERATIONS RESEARCH	Understanding the problem, identifying variables & constants, formulas of optimization model and applying appropriate optimization Tech.
V YEAR	I SEM	R13	A70390	COMPUTER AIDED DESIGN AND MANUFACTURING LAB	<p>Designs have more standardization</p> <ol style="list-style-type: none"> <li>1.Reduced training time for routine drafting tasks and NC part programming</li> <li>2.Customer modifications are easier to make</li> </ol>
V YEAR	I SEM	R-13	A70391	PRODUCTION DRAWING PRACTICE LAB	<ol style="list-style-type: none"> <li>1.The student will be able to read a production drawing properly and understand the conventions used in the drawing.</li> <li>2.To identify and reproduce the symbols used in the conventional representation of materials and components.</li> <li>3.The student will be able to make drawings based on the required tolerances and fits.</li> <li>4.The student will be able to draw and also read detailed part drawings.</li> <li>5.The student will gain a working understanding of how to use CAD software to make [production drawings with the required details.</li> </ol>
V YEAR	I SEM	R13	D38703538	Industrial Management	<p>After a successfully completed course, the student should be able to:</p> <ul style="list-style-type: none"> <li>• choose, prepare, interpret and use cost estimates as a basis for the different situations in an industrial company,</li> <li>• interpret financial statements and other financial reports of industrial companies, including the income statement, the balance sheet, the cash flow statement and key measures in these,</li> <li>• describe how management control of results, action, people and culture functions in an industrial company,</li> <li>• explain how strategic planning, management, entrepreneurship, organisation, production and learning works in an industrial company,</li> <li>• explain how the industrial company markets and price it's products,</li> <li>• explain how the company deal with it's environment.</li> </ul>
V YEAR	I SEM	R13	D3870353	POWER PLANT ENGINEERING	<ol style="list-style-type: none"> <li>1.Describe sources of energy and types of power plants.</li> <li>2.Analyze different types of steam cycles</li> <li>3.Define the performance characteristics and components of such power plants.</li> <li>4.Define terms and factors associated with power plant economics.</li> <li>5.List the principal components and types of nuclear reactors.</li> </ol>
V YEAR	I SEM	R13	A70362	Instrumentation & Control Systems	After undergoing the course the student can select appropriate device for the measurement of parameters like temperature, pressure, speed, stress, humidity, flow velocity etc., and justify its use through characteristics and performance.
V YEAR	I SEM	R13	A70359	UNCONVENTIONAL MACHINING PROCESS	<ul style="list-style-type: none"> <li>• To understand the need and importance of non traditional machining methods.</li> <li>• To know the basic principle, equipment, process variables and Mechanics of metal removal in abrasive jet machining and water jet machining.</li> <li>• To study the fundamentals of tool design, surface finishing and metal removal rate of electro chemical grinding, electro chemical machining and electro chemical honing.</li> <li>• To understand principles of operation, types of electrodes and process parameters and machine tool selection in EDM and Electric discharge grinding and wire cut process.</li> <li>• To know the basics of Electron Beam Machining and comparison of thermal and non thermal processes.</li> <li>• To study the various process parameters and applications of Plasma in manufacturing industries.</li> </ul>

V YEAR	I SEM	R13	A70348	MECHATRONICS	<p>1.Be able to model and analyze electrical and mechanical systems and their interconnection.</p> <p>2.Be able to integrate mechanical, electronics, control and computer engineering in the design of mechatronics systems.</p> <p>3.Be able to do the complete design, building, interfacing and actuation of a mechatronic system for a set of specifications</p>
IV YEAR	II SEM	R13	A80324	RENEWABLE ENERGY SOURCES (ELECTIVE)	<ul style="list-style-type: none"> <li>• Understanding of renewable energy sources</li> <li>• Knowledge of working principle of various energy systems</li> <li>• Capability to carry out basic design of renewable energy systems</li> </ul>
IV YEAR	II SEM	R13	A80365	PLANT LAYOUT AND MATERIAL HANDLING	<p>On successful completion of the course, the student will be able to</p> <ul style="list-style-type: none"> <li>• Explain the importance of proper material handling and storage techniques.</li> <li>• Explain List hazards associated with hoisting and conveying.</li> <li>• Understand proper material handling engineering techniques regarding hoisting and conveying equipment</li> <li>• Understand toxic hazards of materials being handled, such as chemicals, dusts and poisons</li> <li>• Demonstrate the formal training requirements for material handling personnel, especially equipment operators.</li> <li>• Explain the preventative maintenance requirements for material handling equipment.</li> <li>• Explain the components of a material handling equipment inspection program</li> <li>• Demonstrate understanding of the Department of Transportation Labeling and placarding regulations</li> <li>• Explain the methods to protect workers from the hazards involved in manual lifting.</li> <li>• Understand the requirements for a vehicle safety program, including driver training and preventative maintenance.</li> </ul>
V YEAR	II SEM	R13	A80366	PRODUCTION PLANNING AND CONTROL	<ul style="list-style-type: none"> <li>• Upon completion of this course, the students can able to prepare production planning and control activities such as work study, product planning, production scheduling, Inventory Control.</li> <li>• They can plan manufacturing requirements manufacturing requirement Planning (MRP II) and Enterprise Resource Planning (ERP).</li> </ul>
V YEAR	II SEM	R13	A80087	INDUSTRY ORIENTED MINI PROJECT	<p>After learning the contents of this paper the student must be able to:</p> <ol style="list-style-type: none"> <li>1. analyse the approximate cost of any engineering structure,</li> <li>2. to estimate the quantity of materials &amp; Labours.</li> </ol>
V YEAR	II SEM	R13	A80089	SEMINAR	<p>After learning the contents of this paper the student must be able to:</p> <ol style="list-style-type: none"> <li>1. Select a topic relevant to analysis, design and management of a civil engineering system</li> <li>2. Undertake a critical review of the literature on the chosen topic</li> <li>3. Prepare and present a technical report</li> </ol>
V YEAR	II SEM	R13	A80088	PROJECT WORK	<p>After learning the contents of this paper the student must be able to:</p> <ol style="list-style-type: none"> <li>1. Work in a team to select a problem for project work</li> <li>2. Review and evaluate the available literature on the chosen problem</li> <li>3. Formulate the methodology to solve the identified problem</li> <li>4. Apply the principles, tools and techniques to solve the problem</li> <li>5. Prepare and present project report</li> </ol>
V YEAR	II SEM	R13	A80090	COMPREHENSIVE VIVA	<p>After learning the contents of this paper the student must be able to:</p> <ol style="list-style-type: none"> <li>1.This will test the student's learning and understanding during the course of their post graduate programme.</li> <li>2.In doing so, to prepare the students to face interview both at the academic and the industrial sector.</li> </ol>

**DEPARTMENT OF ELECTRICAL & ELECTRONICS ENGINEERING**

Year	Semester	Regulation	Course Code	Course Name	Course Outcomes
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I	I	R16	MA101BS	MATHEMATICS - I	<ol style="list-style-type: none"> <li>1. write the matrix representation of a set of linear equations and to analyze the solution of the system of equations find the Eigen values and Eigen vectors which come across under linear transformations</li> <li>2. find the extreme values of functions of two variables with/ without constraints.</li> <li>3. identify whether the given first order DE is exact or not</li> <li>4. solve higher order DE's and apply them for solving some real world problems</li> </ol>
I	I	R16	CH102BS	ENGINEERING CHEMISTRY	<ol style="list-style-type: none"> <li>1. Students will gain the basic knowledge of electrochemical procedures related to corrosion and its control.</li> <li>2. They can understand the basic properties of water and its usage in domestic and industrial purposes.</li> <li>3. They learn the use of fundamental principles to make predictions about the general properties of materials.</li> <li>4. They can predict potential applications of chemistry and practical utility in order to become good engineers and entrepreneurs.</li> </ol>
I	I	R16	PH103BS	ENGINEERING PHYSICS -I	<ol style="list-style-type: none"> <li>1. Realize the importance of light phenomena in thin films and resolution.</li> <li>2. Learn principle, working of various laser systems and light propagation through optical fibers.</li> <li>3. Distinguish various crystal systems and understand atomic packing factor.</li> <li>4. Know the various defects in crystals.</li> </ol>
I	I	R16	EN104HS	PROFESSIONAL COMMUNICATION IN ENGLISH	<ol style="list-style-type: none"> <li>1. Use English Language effectively in spoken and written forms.</li> <li>2. Comprehend the given texts and respond appropriately.</li> <li>3. Communicate confidently in formal and informal contexts</li> </ol>
I	I	R16	ME105ES	ENGINEERING MECHANICS	<ol style="list-style-type: none"> <li>1. To understand the resolving forces and moments for a given force system</li> <li>2. To analyze the types of friction for moving bodies and problems related to friction.</li> <li>3. To determine the centroid and second moment of area</li> </ol>
I	I	R16	EE106ES	BASIC ELECTRICAL AND ELECTRONICS ENGINEERING	<ol style="list-style-type: none"> <li>1. To analyze and solve problems of electrical circuits using network laws and theorems.</li> <li>2. To identify and characterize diodes and various types of transistors.</li> </ol>
I	I	R16	EN107HS	ENGLISH LANGUAGE COMMUNICATION SKILLS LAB	<ol style="list-style-type: none"> <li>1. Better understanding of nuances of English language through audio- visual experience and group activities</li> <li>2. Neutralization of accent for intelligibility</li> <li>3. Speaking skills with clarity and confidence which in turn enhances their employability</li> </ol>
I	I	R16	ME108ES	ENGINEERING WORKSHOP	<ol style="list-style-type: none"> <li>1. Study and practice on machine tools and their operations</li> <li>2. Practice on manufacturing of components using workshop trades including plumbing, fitting, carpentry, foundry, house wiring and welding.</li> <li>3. Identify and apply suitable tools for different trades of Engineering processes including drilling, material removing, measuring, chiseling.</li> <li>4. Apply basic electrical engineering knowledge for house wiring practice.</li> </ol>
I	I	R16	EA109MC	NSS	<p>The main outcomes of National Service Scheme (NSS) being:</p> <ul style="list-style-type: none"> <li>understanding the community in which they work</li> <li>Understanding themselves in relation to their community</li> <li>Identifying the needs and problems of the community and involving them in problem-solving</li> <li>Developing among themselves a sense of social and civic responsibility</li> <li>Utilising their knowledge in finding practical solutions to individual and community problems</li> <li>Developing competence required for group-living and sharing of responsibilities</li> <li>Gaining skills in mobilising community participation</li> <li>Acquiring leadership qualities and democratic attitudes</li> <li>Developing capacity to meet emergencies and natural disasters and practise national integration and social harmony</li> </ul>

I	II	R16	PH201BS	ENGINEERING PHYSICS - II	<ol style="list-style-type: none"> <li>1. Realize the importance of behavior of a particle quantummechanically.</li> <li>2. Learn concentration estimation of charge carriers in semiconductors.</li> <li>3. Learn various magnetic dielectric properties and apply them in engineeringapplications.</li> <li>4. Know the basic principles and applications of superconductors.</li> </ol>
I	II	R16	MA202BS	MATHEMATICS - II	<ol style="list-style-type: none"> <li>1. Differentiate among random variables involved in the probability models which are useful for all branches ofengineering</li> <li>2. Calculate mean, proportions and variances of sampling distributions and to make important decisions s for few samples which are taken from a largedata</li> <li>3. Solve the tests of ANOVA for classifieddata</li> <li>4. Find the root of a given equation and solution of a system ofequations</li> <li>5. Fit a curve for a givendata</li> <li>6. Find the numerical solutions for a given first order initial valueproblem</li> </ol>
I	II	R16	MA203BS	MATHEMATICS - III	<ul style="list-style-type: none"> <li>•differentiate among random variables involved in the probability models which are useful for all branches of engineering.</li> <li>•calculate mean, proportions and variances of sampling distributions and to make important decisions s for few samples which are taken from a large data.</li> <li>•solve the tests of ANOVA for classified data.</li> <li>•find the root of a given equation and solution of a system of equations.</li> <li>•fit a curve for a given data.</li> <li>•find the numerical solutions for a given first order initial value problem</li> </ul>
I	II	R16	CS204ES	COMPUTER PROGRAMMING IN C	<ol style="list-style-type: none"> <li>1. Demonstrate the basic knowledge of computer hardware andsoftware.</li> <li>2. Ability to write algorithms for solvingproblems.</li> <li>3. Ability to draw flowcharts for solvingproblems.</li> <li>4. Ability to code a given logic in C programminglanguage.</li> <li>5. Gain knowledge in using C language for solvingproblems.</li> </ol>
I	II	R16	ME205ES	ENGINEERING GRAPHICS	<ol style="list-style-type: none"> <li>1. Ability to prepare working drawings to communicate the ideas andinformation.</li> <li>2. Ability to read, understand and interpret engineeringdrawings.</li> </ol>
I	II	R16	CH206BS	ENGINEERING CHEMISTRY LAB	<ul style="list-style-type: none"> <li>•Students are able to estimate the impurities present in water.</li> <li>•Ability to select lubricants for various purposes.</li> <li>•Ability to prepare advanced polymer materials.</li> <li>•Ability to know the strength of an acid present in secondary batteries.</li> <li>•Ability to find the Fe+2, Ca &amp; Cl- present in unknown substances/ ores using titrimetric and instrumental methods.</li> </ul>
I	II	R16	PH207BS	ENGINEERING PHYSICS LAB	<ul style="list-style-type: none"> <li>•Students can effectively use vernier calipers, various rules, meters, scales and other measuring devices to acquire measurements within the stated precision.</li> <li>•Student will use oscilloscopes and multimeters to construct a wide variety of electrical circuits and measure the properties of those circuits.</li> </ul>
I	II	R16	CS208ES	COMPUTER PROGRAMMING IN C LAB	<ol style="list-style-type: none"> <li>1. Ability to design and test programs to solve mathematical and scientificproblems.</li> <li>2. Ability to write structured programs using control structures andfunctions.</li> </ol>
I	II	R16	EA209MC	NCC/NSO	After learning the contents of this paper the student must be able to: NCC has adopted community development activities with the aim of imbibing amongst cadets selfless service to the community, dignity of labour importance of self help, need to protect the environment and to assist weaker sections of the society in their upliftment.
II YEAR	I SEM	R16	MA301BS	MATHEMATICS - IV	<p>After learning the contents of this paper the student must be able to</p> <ol style="list-style-type: none"> <li>1. analyze the complex functions with reference to their analyticity, integration using Cauchy's integral theorem</li> <li>2. find the Taylor's and Laurent's series expansion of complex functions</li> <li>3. the bilinear transformation</li> <li>4. express any periodic function in term of sines and cosines</li> <li>5. express a non-periodic function as integral representation</li> <li>6. analyze one dimensional wave and heat equation</li> </ol>

II YEAR	I SEM	R16	EE302ES	ELECTROMAGNETIC FIELDS	upon completion of course, student will be able to 1. Apply vector calculus to static electric – magnetic fields. 2. Compute the force, fields & Energy for different charge & current configurations & evaluate capacitance and inductance 3. Analyze Maxwell’s equation in different forms (Differential and integral) in Electrostatic, Magnetic time varying fields
II YEAR	I SEM	R16	EE303ES	ELECTRICAL MACHINES - I	After this course, the student will be able to 1. Identify different parts of a DC machine & understand its operation 2. Carry out different testing methods to predetermine the efficiency of DC machines 3. Understand different excitation and starting methods of DC machines 4. Control the voltage and speed of a DC machines
II YEAR	I SEM	R16	EE304ES	NETWORK THEORY	After this course, the student will be able to 1. Analyze the Electrical Circuits with the concept of Network topology 2. Apply the concepts of Magnetic circuit & Analyze Magnetic circuits 3. Determine self and mutually induced EMF’s for Magnetically coupled coils 4. Understand the importance of three phase circuits and Analyze the three phase circuits with Star & Delta connected balanced and unbalanced loads 5. Analyze the transient behavior of electrical networks for various excitations 6. Obtain the various network parameters for the given two port networks 7. Represent the transfer function for the given network 8. Determine the parameters for the design of various filters
II YEAR	I SEM	R16	EE305ES	ELECTRONIC CIRCUITS	After completion of this course the student is able to 1. Apply the knowledge of BJT to design practical amplifier circuits. 2. Design electronic sub systems such as feedback amplifiers, oscillators and power amplifiers to meet the required specifications. 3. Design linear and non linear wave shaping circuits with different inputs. 4. Analyze multi vibrators using transistors.
II YEAR	I SEM	R16	EE306ES	ELECTRICAL MACHINES LAB - I	After completion of this lab the student is able to 1. Start and control the Different DC Machines. 2. Assess the performance of different machines using different testing methods 3. Identify different conditions required to be satisfied for self - excitation of DC Generators. 4. Separate iron losses of DC machines into different components
II YEAR	I SEM	R16	EC306ES	ELECTRONIC DEVICES AND CIRCUITS LAB	1. After Completion of the course the student is able to Apply various devices to real time problems. 2. Compute frequency response of various amplifiers.
II YEAR	I SEM	R16	EE307ES	NETWORKS LAB	After Completion of this lab the student is able to 1. Analyze complex DC and AC linear circuits 2. Apply concepts of electrical circuits across engineering 3. Evaluate response in a given network by using theorems
II YEAR	I SEM	R16	*MC300ES	ENVIRONMENTAL SCIENCE AND TECHNOLOGY	1. Based on this course, the Engineering graduate will understand /evaluate / develop technologies on the basis of ecological principles and environmental regulations which in turn helps in sustainable development
II YEAR	II SEM	R16	EC401ES	SWITCHING THEORY AND LOGIC DESIGN	Upon completion of the course, students should possess the following skills: 1. Be able to manipulate numeric information in different forms, e.g. different bases, signed integers, various codes such as ASCII, Gray and BCD. 2. Be able to manipulate simple Boolean expressions using the theorems and postulates of Boolean algebra and to minimize combinational functions. 3. Be able to design and analyze small combinational circuits and to use standard combinational functions/building blocks to build larger more complex circuits. 4. Be able to design and analyze small sequential circuits and devices and to use standard sequential functions/building blocks to build larger more complex circuits.

II YEAR	II SEM	R16	EE402ES	POWER SYSTEMS	<p>After Completion of this course the student is able to</p> <ul style="list-style-type: none"> <li>• Draw the layout of hydro power plant, thermal power station, Nuclear power plant and gas power plant and explain its operation</li> <li>• Describe A.C. and D.C. distribution systems and its voltage drop calculations</li> <li>• Illustrate various economic aspects of the power plant erection, operation and different tariff methods</li> <li>• Understand power factor improvement methods and determine economical power factor</li> </ul>
II YEAR	II SEM	R16	EE403ES	ELECTRICAL MACHINES - II	<p>After this course, the student</p> <ul style="list-style-type: none"> <li>• Identify different parts of transformers and induction motors and specify their functions</li> <li>• Understand the operation of transformers and induction motors</li> <li>• Carry out different testing methods and assess the performance of transformers and induction motors</li> <li>• Start and control the induction motor</li> </ul>
II YEAR	II SEM	R16	EE404ES	CONTROL SYSTEMS	<p>After completion of this course the student is able to</p> <ul style="list-style-type: none"> <li>• Improve the system performance by selecting a suitable controller and/or a compensator for a specific application</li> <li>• Apply various time domain and frequency domain techniques to assess the system performance</li> <li>• Apply various control strategies to different applications (example: Power systems, electrical drives etc...)</li> <li>• Test system Controllability and Observability using state space representation and applications of state space representation to various systems.</li> </ul>
II YEAR	II SEM	R16	SM405MS	BUSINESS ECONOMICS AND FINANCIAL ANALYSIS	<p>The students will understand the various Forms of Business and the impact of economic variables on the Business. The Demand, Supply, Production, Cost, Market Structure, Pricing aspects are learnt. The Students can study the firm's financial position by analysing the Financial Statements of a Company.</p>
II YEAR	II SEM	R16	EE406ES	CONTROL SYSTEMS LAB	<p>After completion of this lab the student is able to</p> <ul style="list-style-type: none"> <li>• How to improve the system performance by selecting a suitable controller and/or a compensator for a specific application</li> <li>• Apply various time domain and frequency domain techniques to assess the system performance</li> <li>• Apply various control strategies to different applications(example: Power systems, electrical drives etc)</li> <li>• Test system controllability and observability using state space representation and applications of state space representation to various systems</li> </ul>
II YEAR	II SEM	R16	EE407ES	ELECTRICAL MACHINES LAB - I	<p>After the completion of this laboratory course, the student will be able</p> <ul style="list-style-type: none"> <li>• Assess the performance of different machines using different testing methods</li> <li>• To convert the Phase from three phase to two phase and vice versa</li> <li>• Compensate the changes in terminal voltages of synchronous generator after estimating the change by different methods</li> <li>• Control the active and reactive power flows in synchronous machines</li> <li>• Start different machines and control the speed and power factor</li> </ul>

II YEAR	II SEM	R16	EE408ES	ELECTRONIC CIRCUITS LAB	<p>After completion of this lab the student is able to</p> <ul style="list-style-type: none"> <li>• Apply the concepts of amplifiers in the design of Public Addressing System</li> <li>• Generate Sinusoidal wave forms</li> <li>• Design stable system using feedback concepts.</li> <li>• Design multi vibrator using transistor</li> </ul>
II YEAR	II SEM	R16	*MC400HS	GENDER SENSITIZATION LAB	<ul style="list-style-type: none"> <li>• Students will have developed a better understanding of important issues related to gender in contemporary India.</li> <li>• Students will be sensitized to basic dimensions of the biological, sociological, psychological and legal aspects of gender. This will be achieved through discussion of materials derived from research, facts, everyday life, literature, and film.</li> <li>• Students will attain a finer grasp of how gender discrimination works in our society and how to counter it.</li> <li>• Students will acquire insight into the gendered division of labour and its relation to politics and economics.</li> <li>• Men and women students and professionals will be better equipped to work and live together as equals.</li> <li>• Students will develop a sense of appreciation of women in all walks of life.</li> <li>• Through providing accounts of studies and movements as well as the new laws that provide protection and relief to women, the textbook will empower students to understand and respond to gender violence.</li> </ul>
III YEAR	I SEM	R15	A50423	IC APPLICATIONS	<ul style="list-style-type: none"> <li>• Design various applications of Op-Amps.</li> <li>• Design the circuits using special ICs like 555 timer, 723 voltage regulator and 565 PLL.</li> <li>• Design A/D and D/A Converters using ICs.</li> <li>• Design digital circuits using digital ICs.</li> </ul>
III YEAR	I SEM	R15	A50014	MANAGEMENT SCIENCE	<ul style="list-style-type: none"> <li>• Function effectively in multidisciplinary teams to accomplish a common goal of organizations.</li> <li>• Apply theories to improve the practice of management.</li> <li>• Appreciate the management challenges associated with high levels of change in the organizations.</li> <li>• Develop global vision and management skills at both a strategic level and interpersonal level.</li> </ul>
III YEAR	I SEM	R15	A50221	POWER SYSTEMS - II	<ul style="list-style-type: none"> <li>• Derive L and C expressions for various configurations and analyze different types of Transmission lines</li> <li>• Describe Traveling wave theory and derive expressions for reflection and refraction coefficients with various terminations of the lines</li> <li>• Derive expressions for sag with equal and unequal height towers and describe various types of Insulators and also explain various string efficiency methods</li> <li>• Illustrate different types of cables and derive capacitance expressions and describe grading of cables</li> </ul>
III YEAR	I SEM	R15	A50211	CONTROL SYSTEMS	<ul style="list-style-type: none"> <li>• How to improve the system performance by selecting a suitable controller and/or a compensator for a specific application</li> <li>• Apply various time domain and frequency domain techniques to assess the system performance</li> <li>• Apply various control strategies to different applications (example: Power systems, electrical drives etc...)</li> <li>• Test system Controllability and Observability using state space representation and applications of state space representation to various systems.</li> </ul>
III YEAR	I SEM	R15	A50220	POWER ELECTRONICS	<ul style="list-style-type: none"> <li>• Differentiate the static and dynamic characteristics of SCR</li> <li>• Analyze operating principles of different converters</li> <li>• Choose the appropriate converter for various applications</li> <li>• Select the proper controller/converter for variable speed applications</li> </ul>

III YEAR	I SEM	R15	A50218	ELECTRICAL MACHINES - III	<ul style="list-style-type: none"> <li>• To make different armature windings for synchronous machines</li> <li>• To control the both active and reactive powers generated by a synchronous generator</li> <li>• To operate single phase machines</li> <li>• To synchronize an alternator with supply lines.</li> </ul>
III YEAR	I SEM	R15	A50289	ELECTRICAL MACHINES - II LAB	<ul style="list-style-type: none"> <li>• To perform the brake tests on three phase and single phase induction motors to obtain the performance curves</li> <li>• To convert the phase from 3 to 2 vice-versa using Scott connection</li> <li>• To test the transformers and induction motors</li> <li>• To start the induction motors by different methods and to synchronize the given alternator across the supply lines</li> </ul>
III YEAR	I SEM	R15	A50086	ADVANCED COMMUNICATION SKILLS LAB	<ul style="list-style-type: none"> <li>• summarize and synthesize information and produce technical writing that is required in academics as well as in the engineering profession</li> <li>• write Covering Letters, Resume, SOP, Project Proposals and Technical Reports</li> <li>• speak fluently and address a large group of audience and participate in debates and discussions</li> <li>• negotiate terms, manage complex situations through interpersonal skills, persuade people and make quick decisions</li> </ul>
III YEAR	II SEM	R15	A60223	ELECTRICAL AND ELECTRONICS INSTRUMENTATION	<ul style="list-style-type: none"> <li>• To apply the knowledge about the instruments to use them more effectively</li> <li>• Suggest the kind of instrument suitable for typical measurements</li> <li>• To apply the knowledge about transducers to use them effectively.</li> <li>• To apply the knowledge about instrument transformers to use them more effectively in distribution systems.</li> </ul>
III YEAR	II SEM	R15	A60225	STATIC DRIVES	<ul style="list-style-type: none"> <li>• Identify the drawbacks of speed control of motor by conventional methods.</li> <li>• Differentiate Phase controlled and chopper controlled DC drives speedtorque characteristics merits and demerits</li> <li>• Understand Ac motor drive speed–torque characteristics using different control strategies its merits and demerits</li> <li>• Describe Slip power recovery schemes</li> </ul>
III YEAR	II SEM	R15	A60222	COMPUTER METHODS IN POWER SYSTEMS	<ul style="list-style-type: none"> <li>• Solve Load flow problems</li> <li>• Apply symmetrical components for symmetrical and unsymmetrical fault analysis Analyze the different load flow methods</li> <li>• Analyze the swing equation and stability</li> <li>• Analyze different types of stability.</li> </ul>
III YEAR	II SEM	R15	A60430	MICROPROCESSORS AND INTERFACING DEVICES	<ul style="list-style-type: none"> <li>• Demonstrate the ability to design a system, component or a process as per needs and specifications</li> <li>• Select the proper architecture for the implementation of digital designs</li> <li>• Write various assembly language programs for a given task using 8086, 8051 and ARM processors.</li> <li>• Design and implement microprocessor and microcontroller based systems.</li> </ul>
III YEAR	II SEM	R15	A60009	ENVIRONMENTAL STUDIES	<ul style="list-style-type: none"> <li>• Acquire the knowledge on environment</li> <li>• Acquire the knowledge of various Natural Resources</li> <li>• Develop skills in understanding of various environmental problems</li> <li>• Develop skills to protect the Environment</li> </ul>
III YEAR	II SEM	R15	A60117	DISASTER MANAGEMENT	<ul style="list-style-type: none"> <li>• Acquire the knowledge disaster Management</li> <li>• Understand the vulnerability of ecosystem and infrastructure due to a disaster</li> <li>• Acquire the knowledge of Disaster Management Phases</li> <li>• Understand the hazard and vulnerability profile of India</li> </ul>
III YEAR	II SEM	R15	A60017	INTELLECTUAL PROPERTY RIGHTS	<ul style="list-style-type: none"> <li>• Define and identify various terms related to IPRs, obtain, use and protect the various IPRs in a business environment to form an appropriate IP strategy for the relevant market</li> <li>• To analyze the situation of IPR in the Indian context with that of global scenario and understand the patenting process through various case studies.</li> <li>• Identify and explain the tasks and significance of an IP manager and demonstrate competence in critical reasoning, problem solving and decision making</li> <li>• Demonstrate a deep understanding of the language of IP law and how to make the best use of legal professionals involved in IPRs</li> <li>• Demonstrate a critical understanding of the issues involved in and choose appropriate methods for extracting value from an organizations IPR (licensing, joint venture, borrowing, raising capital etc.)..</li> </ul>

III YEAR	II SEM	R15	A60018	HUMAN VALUES AND PROFESSIONAL ETHICS	<ul style="list-style-type: none"> <li>• Students learn the moral issues and problems in engineering ; find the solution to those problems .</li> <li>• Students learn the need for professional ethics, codes of ethics and roles, concept of safety, risk assessment.</li> <li>• Students gain exposure to Environment Ethics &amp; computer ethics; know their responsibilities and rights</li> </ul>
III YEAR	II SEM	R15	A60290	CONTROL SYSTEMS AND SIMULATION LAB	<ul style="list-style-type: none"> <li>• Solve electrical engineering problems using MATLAB Programming and SIMULINK Models</li> <li>• Design various controllers and compensators to improve system performance and test them in the laboratory</li> <li>• To choose various devices (Magnetic amplifiers, Servo motors and stepper motors etc.) for different applications in Electrical Systems</li> <li>• To design the state space model of DC motor.</li> </ul>
III YEAR	II SEM	R15	A60291	POWER ELECTRONICS AND SIMULATION LABORATORY	<ul style="list-style-type: none"> <li>• To analyze operating principles of different converters</li> <li>• To choose the appropriate converter for various applications</li> <li>• Use power electronics simulation packages for analyzing and designing power converters</li> <li>• To simulate different converters using PSPICE software.</li> </ul>
IV YEAR	I SEM	R13	A70231	SWITCH GEAR AND PROTECTION	<ul style="list-style-type: none"> <li>• Students are knowledgeable in the field of power system protection and circuit breakers.</li> <li>• Students are knowledgeable in the field of relays</li> <li>• Students will demonstrate and ability to design the relevant protection systems for the main elements of power systems</li> <li>• Students are knowledgeable in the field of over voltage protection and the basics of data transmission.</li> </ul>
IV YEAR	I SEM	R13	A70232	UTILIZATION OF ELECTRICAL ENERGY	<ul style="list-style-type: none"> <li>• Know types of electric drives, choice of motor, starting and running characteristics, speed control, temperature rise, particular applications of electric drives, types of industrial loads.</li> <li>• Describe advantages and methods of electric heating and Electric welding</li> <li>• Describe existing electric traction systems in India, special features of traction motor and various operating techniques, Speed-time curves for different services and various calculations regarding traction systems.</li> <li>• Applications of electric drives in traction systems.</li> </ul>
IV YEAR	I SEM	R13	A70421	DIGITAL SIGNAL PROCESSING	<ul style="list-style-type: none"> <li>• Analyze and process signals in the discrete domain</li> <li>• Design filters to suit specific requirements for specific applications</li> <li>• Perform statistical analysis and inferences on various types of signals</li> <li>• Design and control the electrical drive using different 24xx processors.</li> </ul>
IV YEAR	I SEM	R13	A70230	POWER SYSTEM OPERATION AND CONTROL	<ul style="list-style-type: none"> <li>• Analyze the optimal scheduling of power plants</li> <li>• Analyze the steady state behavior of the power system for voltage and frequency fluctuations</li> <li>• Describe reactive power control of a power system</li> <li>• Should be able to design suitable controller to dampen the frequency and voltage steady state oscillations.</li> </ul>
IV YEAR	I SEM	R13	A70228	HIGH VOLTAGE ENGINEERING	<ul style="list-style-type: none"> <li>• Know how conduction and breakdown will occur in gases, liquids and solids dielectrics and different applications of these insulating materials in electrical power apparatus.</li> <li>• Know the insulation testing of various components in power systems for different types of voltages, namely power frequency A.C, high frequency, switching or lightning impulses, for which generation of high voltages in laboratories is essential.</li> <li>• Appreciate the necessity to measure the voltages and currents accurately, ensuring perfect safety to the personnel and equipment.</li> <li>• Analyze the necessary condition for all the electrical equipment which are capable of withstanding the over voltages which met in service like natural causes lightning or system originated ones switching or power frequency transient voltages.</li> </ul>

IV YEAR	I SEM	R13	A70432	VLSI DESIGN	<ul style="list-style-type: none"> <li>• Understand and design embedded systems and real-time systems</li> <li>• Define the unique design problems and challenges of real-time systems</li> <li>• Identify the unique characteristics of real-time operating systems and evaluate the need for real-time operating system</li> <li>• Explain the general structure of a real-time system, to Understand and use RTOS to build an embedded real-time system</li> <li>• Gain knowledge and skills necessary to design and develop embedded applications based on real-time operating systems.</li> </ul>
IV YEAR	I SEM	R13	A70435	DIGITAL CONTROL SYSTEMS	<ul style="list-style-type: none"> <li>• To expose the students to the concepts of Digital control systems.</li> <li>• To provide adequate knowledge of discrete systems in state variable analysis.</li> <li>• To teach about the concept of stability analysis and design of discrete time systems.</li> <li>• To provide comprehensive knowledge of optimal control.</li> </ul>
IV YEAR	I SEM	R13	A70229	OPTIMIZATION TECHNIQUES	<ul style="list-style-type: none"> <li>• Formulate mathematical statement of optimization problem</li> <li>• Understand various methods of optimization techniques</li> <li>• Understand the concept of genetic algorithm</li> </ul>
IV YEAR	I SEM	R13	A70226	ELECTRICAL DISTRIBUTION SYSTEMS	<ul style="list-style-type: none"> <li>• Analyze the electrical distribution system for voltage drop and power loss calculations in lines.</li> <li>• Analyze optimal conductor selection for distribution systems.</li> <li>• Describe Distribution Automation objectives and SCADA</li> <li>• Analyze the effect of series capacitor for voltage control.</li> </ul>
IV YEAR	I SEM	R13	A70227	ELECTRICAL ESTIMATION AND COSTING	<ul style="list-style-type: none"> <li>• To understand the necessity of conservation of Energy.</li> <li>• To Know the methods of Energy management .</li> <li>• To identify the factors to increase the efficiency of electrical equipment.</li> <li>• To know the benefits of carrying out energy Audits.</li> </ul>
IV YEAR	I SEM	R13	A70498	MICROPROCESSORS AND INTERFACING DEVICES LAB	<ul style="list-style-type: none"> <li>• Develop the basic skills on hardware and software/programming of microprocessor</li> <li>• Enhance assembly language programming skills for simple and complex calculations used in various engineering disciplines.</li> <li>• Capable to innovative and design intelligent systems, called embedded systems, using microprocessor for special purpose.</li> <li>• Involve in verification of functionality, speed and power of microprocessor based system</li> </ul>
IV YEAR	I SEM	R13	A70293	ELECTRICAL MEASUREMENTS LAB	<ul style="list-style-type: none"> <li>• get the ability to choose instruments</li> <li>• can test any instrument</li> <li>• can find the accuracy of any instrument by performing experiment</li> <li>• can calibrate PMMC instrument using D.C potentiometer</li> </ul>
IV YEAR	II SEM	R13	A80237	FUNDAMENTALS AND HVDC AND FACTS DEVICES	<ul style="list-style-type: none"> <li>• Compare EHV AC and HVDC system and to describe various types of DC links</li> <li>• Analyze Graetz circuit and also explain 6 and 12 pulse converters</li> <li>• Describe various methods for the control of HVDC systems and to perform power flow analysis in AC/DC systems</li> <li>• Describe various protection methods for HVDC systems and classify Harmonics and design different types of filters</li> </ul>
IV YEAR	II SEM	R13	A80238	NEURAL NETWORKS AND FUZZY LOGIC	<ul style="list-style-type: none"> <li>• The concepts of feed forward neural networks and learning and understanding of feedback neural networks.</li> <li>• Concept of fuzziness involved in various systems and fuzzy set theory.</li> <li>• Comprehensive knowledge of fuzzy logic control and adaptive fuzzy logic.</li> <li>• Adequate knowledge of application of fuzzy logic control to real time systems.</li> </ul>
IV YEAR	II SEM	R15	A80324	RENEWABLE ENERGY RESOURCES	<ul style="list-style-type: none"> <li>• To use different renewable energy sources to produce electrical power</li> <li>• To minimize the use of conventional energy sources to produce electrical energy</li> <li>• To identify the fact that the conventional energy resources are depleted</li> <li>• To store energy and to avoid the environmental pollution</li> </ul>



IV YEAR	II SEM	R13	A80244	PRINCIPLES OF RELIABILITY ENGINEERING	<ul style="list-style-type: none"> <li>• Define Reliability and unreliability and describe Rules for combining probabilities of events</li> <li>• Define Hazard rate function and derive the expressions for different reliability functions</li> <li>• Explain Discrete Markov chains and Continuous Markov process</li> <li>• Apply Reliability concepts for Generation, composite and Distribution systems</li> </ul>
IV YEAR	II SEM	R13	A80234	ADVANCED CONTROL SYSTEMS	<ul style="list-style-type: none"> <li>• To expose the students to the concepts of Digital control systems.</li> <li>• To provide adequate knowledge of discrete systems in state variable analysis.</li> <li>• To teach about the concept of stability analysis and design of discrete time systems.</li> <li>• To provide comprehensive knowledge of optimal control.</li> </ul>
IV YEAR	II SEM	R13	A80235	EHVAC TRANSMISSION	<ul style="list-style-type: none"> <li>• Choose proper controller for the specific application based on system requirements</li> <li>• Understand various systems thoroughly and their requirements</li> <li>• Understand the control circuits of Shunt Controllers SVC &amp; STATCOM for various functions viz. Transient stability Enhancement, voltage instability prevention and power oscillation damping</li> <li>• Understand the Power and control circuits of Series Controllers GCSC, TSSC and TCSC</li> </ul>
IV YEAR	II SEM	R13	A80909	NANO TECHNOLOGY	<ul style="list-style-type: none"> <li>• Appreciate the importance of nano dimensional materials and their applications.</li> <li>• Realize and explain that the properties of nano materials are size dependent and vary from corresponding bulk materials</li> <li>• Demonstrate the skills required to prepare some of the nano materials in the laboratory</li> <li>• Appreciate the applications of nano electronic devices and understand their basic principles.</li> </ul>
IV YEAR	II SEM	R13	A80087	INDUSTRY ORIENTED MINI PROJECT	<ol style="list-style-type: none"> <li>1. To explore the scientific theories, ideas, methodologies and the new cutting edge technologies in renewable energy engineering, and use this erudition in their professional development and gain sufficient competence to solve the current and future energy problems universally.</li> <li>2. To be able to utilize of technologies like PLC, PMC, process controllers, transducers and HMI and design, install, test , maintain power systems and industrial applications.</li> </ol>
IV YEAR	II SEM	R13	A80089	TECHNICAL SEMINAR	<ol style="list-style-type: none"> <li>1. will have an ability to apply knowledge of mathematics and science in EEE systems.</li> <li>2. will have an ability to provide solutions for EEE problems by designing and conducting experiments, interpreting and analysing data, and reporting the results.</li> </ol>
IV YEAR	II SEM	R13	A80088	PROJECT WORK	<ol style="list-style-type: none"> <li>1. Identify, formulate, review research literature, and analyze complex engineering problems reaching substantiated conclusions using first principles of mathematics, natural sciences, and engineering sciences.</li> <li>2. 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.</li> <li>3. 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.</li> <li>4. will have a good knowledge in microprocessors/microcontrollers, data structures, computer programming and simulation software.</li> <li>5. will be able to develop mathematical modelling, analysis and design of control systems and associated instrumentation for EEE.</li> </ol>

IV YEAR	II SEM	R13	A80090	COMPREHENSIVE VIVA VOCE	<ol style="list-style-type: none"> <li>1. will have comprehensive understanding of the entire range of electronic devices, analog and digital circuits with added state-of art knowledge on advanced electronic systems.</li> <li>2. will have knowledge and exposure on different power electronic circuits and drives for industrial applications.</li> <li>3. will have in-depth knowledge in transmission and distribution systems, power system analysis and protection systems to pursue a career in the power sector.</li> </ol>
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**DEPARTMENT OF ELECTRONICS AND COMMUNICATION ENGINEERING**

Year	Semester	Regulation	Course Code	Course Name	Course Outcomes
I	I	R16	MA101BS	MATHEMATICS - I	<ol style="list-style-type: none"> <li>1. write the matrix representation of a set of linear equations and to analyze the solution of the system of equations find the Eigen values and Eigen vectors which come across under linear transformations</li> <li>2. find the extreme values of functions of two variables with/ without constraints.</li> <li>3. identify whether the given first order DE is exact or not</li> <li>4. solve higher order DE's and apply them for solving some real world problems</li> </ol>
I	I	R16	CH102BS	ENGINEERING CHEMISTRY	<ol style="list-style-type: none"> <li>1. Students will gain the basic knowledge of electrochemical procedures related to corrosion and its control.</li> <li>2. They can understand the basic properties of water and its usage in domestic and industrial purposes.</li> <li>3. They learn the use of fundamental principles to make predictions about the general properties of materials.</li> <li>4. They can predict potential applications of chemistry and practical utility in order to become good engineers and entrepreneurs.</li> </ol>
I	I	R16	PH103BS	ENGINEERING PHYSICS - I	<ol style="list-style-type: none"> <li>1. Realize the importance of light phenomena in thin films and resolution.</li> <li>2. Learn principle, working of various laser systems and light propagation through optical fibers.</li> <li>3. Distinguish various crystal systems and understand atomic packing factor.</li> <li>4. Know the various defects in crystals.</li> </ol>
I	I	R16	EN104HS	PROFESSIONAL COMMUNICATION IN ENGLISH	<ol style="list-style-type: none"> <li>1. Use English Language effectively in spoken and written forms.</li> <li>2. Comprehend the given texts and respond appropriately.</li> <li>3. Communicate confidently in formal and informal contexts</li> </ol>
I	I	R16	ME105ES	ENGINEERING MECHANICS	<ol style="list-style-type: none"> <li>1. To understand the resolving forces and moments for a given force system</li> <li>2. To analyze the types of friction for moving bodies and problems related to friction.</li> <li>3. To determine the centroid and second moment of area</li> </ol>
I	I	R16	EE106ES	BASIC ELECTRICAL AND ELECTRONICS ENGINEERING	<ol style="list-style-type: none"> <li>1. To analyze and solve problems of electrical circuits using network laws and theorems.</li> <li>2. To identify and characterize diodes and various types of transistors.</li> </ol>
I	I	R16	EN107HS	ENGLISH LANGUAGE COMMUNICATION SKILLS LAB	<ol style="list-style-type: none"> <li>1. Better understanding of nuances of English language through audio- visual experience and group activities</li> <li>2. Neutralization of accent for intelligibility</li> <li>3. Speaking skills with clarity and confidence which in turn enhances their employability</li> </ol>
I	I	R16	ME108ES	ENGINEERING WORKSHOP	<ol style="list-style-type: none"> <li>1. Study and practice on machine tools and their operations</li> <li>2. Practice on manufacturing of components using workshop trades including plumbing, fitting, carpentry, foundry, house wiring and welding.</li> <li>3. Identify and apply suitable tools for different trades of Engineering processes including drilling, material removing, measuring, chiseling.</li> <li>4. Apply basic electrical engineering knowledge for house wiring practice.</li> </ol>

I	I	R16	EA109MC	NSS	<p>The main outcomes of National Service Scheme (NSS) being:</p> <p>understanding the community in which they work</p> <p>Understanding themselves in relation to their community</p> <p>Identifying the needs and problems of the community and involving them in problem-solving</p> <p>Developing among themselves a sense of social and civic responsibility</p> <p>Utilising their knowledge in finding practical solutions to individual and community problems</p> <p>Developing competence required for group-living and sharing of responsibilities</p> <p>Gaining skills in mobilising community participation</p> <p>Acquiring leadership qualities and democratic attitudes</p> <p>Developing capacity to meet emergencies and natural disasters and practise national integration and social harmony</p>
I	II	R16	PH201BS	ENGINEERING PHYSICS - II	<ol style="list-style-type: none"> <li>1. Realize the importance of behavior of a particle quantummechanically.</li> <li>2. Learn concentration estimation of charge carriers in semiconductors.</li> <li>3. Learn various magnetic dielectric properties and apply them in engineering applications.</li> <li>4. Know the basic principles and applications of superconductors.</li> </ol>
I	II	R16	MA202BS	MATHEMATICS - II	<ol style="list-style-type: none"> <li>1. Differentiate among random variables involved in the probability models which are useful for all branches of engineering</li> <li>2. Calculate mean, proportions and variances of sampling distributions and to make important decisions for few samples which are taken from a large data</li> <li>3. Solve the tests of ANOVA for classified data</li> <li>4. Find the root of a given equation and solution of a system of equations</li> <li>5. Fit a curve for a given data</li> <li>6. Find the numerical solutions for a given first order initial value problem</li> </ol>
I	II	R16	MA203BS	MATHEMATICS - III	<ul style="list-style-type: none"> <li>•differentiate among random variables involved in the probability models which are useful for all branches of engineering.</li> <li>•calculate mean, proportions and variances of sampling distributions and to make important decisions for few samples which are taken from a large data.</li> <li>•solve the tests of ANOVA for classified data.</li> <li>•find the root of a given equation and solution of a system of equations.</li> <li>•fit a curve for a given data.</li> <li>•find the numerical solutions for a given first order initial value problem</li> </ul>
I	II	R16	CS204ES	COMPUTER PROGRAMMING IN C	<ol style="list-style-type: none"> <li>1. Demonstrate the basic knowledge of computer hardware and software.</li> <li>2. Ability to write algorithms for solving problems.</li> <li>3. Ability to draw flowcharts for solving problems.</li> <li>4. Ability to code a given logic in C programming language.</li> <li>5. Gain knowledge in using C language for solving problems.</li> </ol>
I	II	R16	ME205ES	ENGINEERING GRAPHICS	<ol style="list-style-type: none"> <li>1. Ability to prepare working drawings to communicate the ideas and information.</li> <li>2. Ability to read, understand and interpret engineering drawings.</li> </ol>
I	II	R16	CH206BS	ENGINEERING CHEMISTRY LAB	<ul style="list-style-type: none"> <li>•Students are able to estimate the impurities present in water.</li> <li>•Ability to select lubricants for various purposes.</li> <li>•Ability to prepare advanced polymer materials.</li> <li>•Ability to know the strength of an acid present in secondary batteries.</li> <li>•Ability to find the Fe<sup>2+</sup>, Ca &amp; Cl<sup>-</sup> present in unknown substances/ ores using titrimetric and instrumental methods.</li> </ul>
I	II	R16	PH207BS	ENGINEERING PHYSICS LAB	<ul style="list-style-type: none"> <li>•Students can effectively use vernier calipers, various rules, meters, scales and other measuring devices to acquire measurements within the stated precision.</li> <li>•Student will use oscilloscopes and multimeters to construct a wide variety of electrical circuits and measure the properties of those circuits.</li> </ul>
I	II	R16	CS208ES	COMPUTER PROGRAMMING IN C LAB	<ol style="list-style-type: none"> <li>1. Ability to design and test programs to solve mathematical and scientific problems.</li> <li>2. Ability to write structured programs using control structures and functions.</li> </ol>
I	II	R16	EA209MC	NCC/NSO	<p>After learning the contents of this paper the student must be able to:</p> <p>NCC has adopted community development activities with the aim of imbuing amongst cadets selfless service to the community, dignity of labour importance of self help, need to protect the environment and to assist weaker sections of the society in their upliftment.</p>

II	I	R16	MA301BS	MATHEMATICS - IV	<ol style="list-style-type: none"> <li>1. Analyze the complex functions with reference to their analyticity, integration using Cauchy's integral theorem</li> <li>2. find the Taylor's and Laurent's series expansion of complex functions the bilinear transformation</li> <li>3. express any periodic function in term of sines and cosines</li> <li>4 express a non-periodic function as integral representation</li> <li>5 analyze one dimensional wave and heat equation</li> </ol>
II	I	R16	EC302ES	ANALOG ELECTRONICS	<ul style="list-style-type: none"> <li>☑ Design various amplifier circuits using Bipolar Junction Transistors in Common Emitter, Common Base and Common Collector configurations.</li> <li>☑ Understand the effect of coupling and bypass capacitances on frequency response of singlestage amplifiers.</li> <li>☑ Analyse various BJT amplifier circuits and their frequency responses at low, mid and Highfrequencies.</li> <li>☑ Apply the usefulness of amplifiers expending semiconductor devices in various real time circuitmaking.</li> <li>☑ Understand and remember the concept of Bipolar Junction Transistor amplifiers at high frequencies.</li> <li>☑ Analyse various high frequency parameters like Conductance's, resistances and Capacitances in Hybrid-<math>\pi</math> model.</li> </ul>
II	I	R16	EC303ES	ELECTRICAL TECHNOLOGY	<ol style="list-style-type: none"> <li>1. Understand the transient response of series RL and RC circuits by differential and Laplacetransform approach.</li> <li>2. Understand the transient response of series RLC circuit by differential and Laplacetransform approach.</li> <li>3. Explain impedance parameters in two port networks and conversion of impedanceparameters into all other parameters.</li> <li>4. Explain admittance parameters in two port networks and conversion of admittance parameters into all other parameters.</li> <li>5. Explain ABCD parameters in two port networks and conversion of ABCD parameters intoall other parameters.</li> </ol>
II	I	R16	EC304ES	SIGNALS AND STOCHASTIC PROCESS	<ol style="list-style-type: none"> <li>1. Understand probabilities and able to solve using an appropriate samplespace.</li> <li>2. Compute various operations like expectations from probability density functions (pdfs) and probability distributionfunctions</li> <li>3. Perform Likelihood ratio tests from pdfs for statistical engineeringproblems.</li> <li>4. Mean and covariance functions for simple randomvariables.</li> <li>5. Understand Auto-correlation and cross correlation properties between two randomvariables.</li> <li>6. Explain the concept of random process, differentiate between stochastic and ergodicprocesses.</li> </ol>
II	I	R16	EC305ES	NETWORK ANALYSIS	<ol style="list-style-type: none"> <li>1. To equip the students with the knowledge and techniques of analyzing Three phase electrical circuits.</li> <li>2. Students learn network function representation.</li> <li>3. Students learn to characterize and analyse networks in both the time and complex frequency domain.</li> <li>4. Students learn the ideas of Two-port Network parameters.</li> <li>5. To introduce the concept of DC and AC transient analysis.</li> <li>6. To introduce the student to different types of filters.</li> </ol>
II	I	R16	EC306ES	ELECTRONIC DEVICES AND CIRCUITS LAB	<ol style="list-style-type: none"> <li>1. After Completion of the course the student is able to Apply various devices to real</li> <li>2. time problems. Compute frequency response of various amplifiers.</li> </ol>

II	I	R16	EC307ES	BASIC SIMULATION LAB	<p>Students successfully simulate various signals, systems and characteristics in different domain</p> <ul style="list-style-type: none"> <li>•Verification of Linearity and Time Invariance Properties of a given Continuous/Discrete System.</li> <li>•Analyze the Fourier Transform of a given signal and plotting its magnitude and phase spectrum.</li> <li>•Understand the Waveform Synthesis using Laplace Transform.</li> <li>•Remember for Locating the Zeros and Poles and plotting the Pole-Zero maps in S-plane and Z-Plane for the given transfer function.</li> <li>•Verification of Weiner-Khinchine Relations and Sampling Theorem.</li> </ul>
II	I	R16	EC308ES	BASIC ELECTRICAL ENGINEERING LAB	<ol style="list-style-type: none"> <li>1. Measure power in three phase circuits</li> <li>2. Distinguish between the effects of Eddy current and hysteresis losses in magnetic materials</li> <li>3. Measure performance characteristics of DC generators and three-phase induction motors.</li> <li>4. Perform power transformer open and short circuit tests and determine the values of elements of the equivalent circuit.</li> <li>5. Design experiments for measuring characteristics of different semiconductor diodes</li> <li>6. Measure characteristics and efficiency of a solar cell</li> <li>7. Extract model parameters of diodes and solar cell from measured I-V characteristics</li> <li>8. Design experiments and measure characteristics of MOS and BJT transistors</li> <li>9. Extract transistor model parameters from the measured characteristics</li> <li>10. Write a professional quality laboratory report describing their work, results and analysis.</li> </ol>
II	I	R16	MC300ES	ENVIRONMENTAL SCIENCE AND TECHNOLOGY	<ol style="list-style-type: none"> <li>1. Based on this course, the Engineering graduate will understand /evaluate / develop</li> <li>2. technologies on the basis of ecological principles and environmental regulations</li> <li>3. which in turn helps in sustainable development</li> </ol>
II	II	R16	EC401ES	SWITCHING THEORY AND LOGIC DESIGN	<ol style="list-style-type: none"> <li>1. Understand number systems, binary addition and subtraction, 2's complement representation and operations with this representation and understand the different binary codes.</li> <li>2. Explain switching algebra theorems and apply them for logic functions.</li> <li>3. Identify the importance of SOP and POS canonical forms in the minimization or other optimization of Boolean methods in general and digital circuits.</li> <li>4. Discuss about digital logic gates and their properties.</li> <li>5. Evaluate functions using various types of minimizing algorithms like Boolean algebra, Karnaugh map or tabulation method.</li> <li>6. Analyze the design procedures of Combinational logic circuits.</li> <li>7. Understand bi-stable elements and different types of latches and flip-flops.</li> <li>8. Analyze the design procedures of small sequential circuits and devices and to use standard sequential functions /building blocks to build larger more complex circuits</li> <li>9. Understand and analyze the design a finite state machine, as charts...</li> </ol>

II	II	R16	EC402ES	PULSE AND DIGITAL CIRCUITS	<ol style="list-style-type: none"> <li>1. Understand the response of high pass RC and low pass RC circuits to different nonsinusoidal inputs with different time constants and identify RC circuit's applications.</li> <li>2. Discuss the various clipper circuits using switching components like diodes, transistors and design various clipper circuits with and without reference voltages.</li> <li>3. Formulate clamping circuit theorem and design practical clamping circuits by understanding the different diode clamper circuits.</li> <li>4. Illustrate the Bistable multi with various triggering methods and apply design procedures to different bistable multivibrator circuits.</li> <li>5. Evaluate triggering points, hysteresis width of Schmitt trigger circuit and also design practical Schmitt trigger circuit.</li> <li>6. Analyze the Monostable, Astable multivibrator circuits with applications and evaluate time, frequency parameters.</li> <li>7. Understand the different types of sampling gates with operating principles using diodes, transistors and also evaluate various parameters of sampling gates.</li> </ol>
II	II	R16	EE404ES	CONTROL SYSTEMS	<ol style="list-style-type: none"> <li>1. Understand the concept of open loop and closed loop systems with real time examples.</li> <li>2. Derive the mathematical perfect for electrical and mechanical systems using differentialequations.</li> <li>3. Identify the equivalent model for electrical and mechanical systems using force voltage and force current analogy.</li> <li>4. Discuss the block diagram reduction techniques and effect of feedback in open loop and closed loop systems.</li> <li>5. Evaluate the transfer function of signal flow graphs using Mason's gain formula and apply standard test signals for transient analysis.</li> <li>6. Evaluate steady state errors and error constants for first and second order systems by using step, ramp and impulse signals.</li> </ol>
II	II	R16	EC405ES	ANALOG COMMUNICATION	<ol style="list-style-type: none"> <li>1. Acquire basic knowledge of physical and electrical conducting properties of semiconductors.</li> <li>2. Develop the Ability to understand the design and working of BJT / FET amplifiers.</li> <li>3. Able to design amplifier circuits using BJTs and FET's. and observe the amplitude and frequency responses of common amplifier circuits</li> <li>4. Observe the effect of negative feedback on different parameters of an Amplifier and different types of negative feedback topologies.</li> <li>5. Observe the effect of positive feedback and able to design and working of different Oscillators using BJTs.</li> <li>6. Develop the skill to build, and troubleshoot Analog circuits.</li> </ol>
II	II	R16	SN405MS	BUSINESS ECONOMICS AND FINANCIAL ANALYSIS	<ol style="list-style-type: none"> <li>1. Explain the macro economics, micro economics, nature and scope of managerial economics.</li> <li>2. Describe about demand analysis, the law of demand, demand curve and demand function.</li> <li>3. Examine the expectations and exceptions of law of demand with suitable examples.</li> <li>4. Understand the elasticity of the demand of the product, different types, measurement of elasticity of demand and factors influencing on elasticity of demand.</li> <li>5. Discuss different methods of demand forecasting and the factors governing demand forecasting.</li> <li>6. Recognize the Fabrication function, features of Iso-Quants and Iso-Costs, different types of internal economies, external economies and law of returns with appropriate examples.</li> <li>7. Demonstrate different types of costs for managerial use with suitable examples.</li> <li>8. Identify the significance and limitations of Break-Even Analysis for decision making and forward planning.</li> </ol>

II	II	R16	EC406ES	ANALOG COMMUNICATION LAB	<ol style="list-style-type: none"> <li>1. Demonstrate understanding of various amplitude modulation and demodulation techniques.</li> <li>2. Demonstrate understanding of frequency modulation and demodulation technique.</li> <li>3. Explain the Sampling Theorem</li> <li>4. Explain the basic multiplexing techniques: FDM, TDM.</li> <li>5. Understand and explain the AGC Characteristics.</li> <li>6. Compare different modulations and to recognize the advantages and disadvantages of them.</li> <li>7. Write programs using MATLAB</li> </ol>
II	II	R16	EC407ES	PULSE AND DIGITAL CIRCUITS LAB	<ol style="list-style-type: none"> <li>1. Will be able to Generate and process sinusoidal and non-sinusoidal signals.</li> <li>2. Will be able to understand fundamentals of basic logic gates and design applications.</li> <li>3. Will be able to design and analyze various multivibrator circuits.</li> <li>4. Will be able to design and analyze UJT relaxation oscillator and boot-strap sweep circuits</li> </ol>
II	II	R16	EC408ES	ANALOG ELECTRONICS LAB	<ol style="list-style-type: none"> <li>1. An ability to design and conduct experiments on amplifiers, oscillators &amp; multivibrators.</li> <li>2. An ability to use the techniques, skills and modern engineering tools of electronic circuits for engineering practice.</li> </ol>
II	II	R16	MC400HS	GENDER SENSITIZATION	<ul style="list-style-type: none"> <li>•Students will have developed a better understanding of important issues related to gender in contemporary India.</li> <li>•Students will be sensitized to basic dimensions of the biological, sociological, psychological and legal aspects of gender. This will be achieved through discussion of materials derived from research, facts, everyday life, literature, and film.</li> <li>•students will attain a finer grasp of how gender discrimination works in our society and how to counter it.</li> <li>•Students will acquire insight into the gendered division of labour and its relation to politics and economics.</li> </ul>
III	I	R15	A50217	CONTROL SYSTEMS ENGINEERING	<ol style="list-style-type: none"> <li>1. •Understands Open loop and closed loop control systems, concept of feedback in control systems, mathematical modeling and</li> <li>2. transfer function derivations of Synchros, AC and DC servo motors, Transfer function representation through block diagram</li> <li>3. algebra and signal flow graphs.</li> <li>4. •Time response analysis of different ordered systems through their characteristic equation and time domain specifications.</li> <li>5. •Stability analysis of control systems in S-domain through R-H criteria and root-locus techniques.</li> <li>6. •Frequency response analysis through bode diagrams, Nyquist, polar plots .</li> <li>7. •The basics of state space analysis, design of PID controllers, lag, lead, lag-lead compensators, with which he/she can able to</li> <li>8. apply the above conceptual things to real-world electrical and electronics problems and applications.</li> </ol>
III	I	R15	A50516	COMPUTER ORGANIZATION AND OPERATING SYSTEMS	<p>Understands basic structure of a digital computer.</p> <ul style="list-style-type: none"> <li>•Arithmetic operations of binary number system.</li> <li>•The organization of Control unit, Arithmetic and Logical unit, Memory unit and the I/O unit.</li> <li>•Operating system-functions, types, system calls.</li> <li>•Memory management techniques and dead lock avoidance.</li> <li>•Operating systems file system implementation and its interface.</li> </ul>

III	I	R15	A50418	ANTENNAS AND WAVE PROPAGATION	<p>Students get aware of the parameter considerations viz. antenna efficiency, beam efficiency, radiation resistance etc. in the design of an antenna.</p> <ul style="list-style-type: none"> <li>• Capable to analyze the designed antenna and field evaluation under various conditions and formulate the electric as well as the magnetic fields equation set for Far field and near field conditions.</li> <li>• Understand the Array system of different antennas and field analysis under application of different currents to the individual antenna elements.</li> <li>• Understand the design issues, operation of fundamental antennas like Yagi-Uda, Horn antennas and helical structure and also their operation methodology in practice.</li> <li>• Design a lens structure and also the bench setup for antenna parameter measurement of testing for their effectiveness.</li> <li>• Knowledge about the means of propagation of Electromagnetic wave. i.e. free space propagation and also about frequency dependent layer selection, its respective issues for an effective transmission of information in the form of EM wave to a remote location and related issues</li> </ul>
III	I	R15	A50422	ELECTRONIC MEASUREMENT AND INSTRUMENTATION	<p>Describe the fundamental concepts and principles of instrumentation.</p> <ul style="list-style-type: none"> <li>• Explain the operations of the various instruments required in measurements.</li> <li>• Apply the measurement techniques for different types of tests.</li> <li>• To select specific instrument for specific measurement function.</li> <li>• Understand principle of operation, working of different electronic instruments like digital multi meter, vector voltmeter.</li> <li>• Learners will apply knowledge of different oscilloscopes like CRO, DSO.</li> <li>• Students will understand functioning, specification, and applications of signal analyzing instruments.</li> </ul>
III	I	R15	A50408	ANALOG COMMUNICATION	<p>Conceptually understand the baseband signal &amp; system.</p> <ul style="list-style-type: none"> <li>• Identify various elements, processes, and parameters in telecommunication systems, and describe their functions, effects, and Inter relationship.</li> <li>• Design procedure of AM Transmission &amp; Reception, analyze, measure, and evaluate the performance of a telecommunication system against given criteria.</li> <li>• Understand basic knowledge of FM Transmission &amp; Reception.</li> <li>• Understand various types of SSB Transmission &amp; Reception.</li> <li>• Design typical telecommunication systems that consist of basic and essential building blocks</li> </ul>
III	I	R15	A50425	LINEAR AND DIGITAL IC APPLICATIONS	<ul style="list-style-type: none"> <li>• A thorough understanding of operational amplifiers with linear and non - linear applications of operational amplifiers.</li> <li>• Understanding of the different families of digital integrated circuits and their characteristics.</li> <li>• Also students will be able to design circuits using operational amplifiers for various applications.</li> <li>• To introduce the theory and applications of analog multipliers and PLL.</li> <li>• Understand the theory of ADC and DAC and implement the working of basic digital circuits.</li> <li>• To introduce the concepts of waveform generation and introduce some special function ICs.</li> </ul>
III	I	R15	A50482	ANALOG COMMUNICATION LAB	<ul style="list-style-type: none"> <li>• A student learns to simulate using MATLAB, Comsim or any other simulation package and then realize in hardware.</li> <li>• Amplitude modulation and demodulation.</li> <li>• DSB-SC, SSB-SC Modulator &amp; Detector.</li> <li>• Frequency modulation and demodulation.</li> <li>• Study of spectrum analyzer and analysis of AM and FM Signals</li> <li>• Pre-emphasis &amp; de-emphasis.</li> <li>• Time, Frequency Division Multiplexing &amp; De multiplexing</li> <li>• Verification of Sampling Theorem.</li> <li>• Pulse-Amplitude, Width, Position Modulation &amp; Demodulation</li> <li>• Frequency Synthesizer, AGC Characteristics, PLL as FM Demodulator.</li> </ul>



III	I	R15	A50488	IC APPLICATIONS AND HDL SIMULATION LAB	<ul style="list-style-type: none"> <li>•Studies about OP AMP Applications – Adder, Subtractor, Comparators.</li> <li>•Integrator and Differentiator Circuits using IC 741.</li> <li>•Active Filter Applications – LPF, HPF (first order)</li> <li>•IC 741 Waveform Generators – Sine, Square wave and Triangular waves&amp; Schmitt Trigger Circuits.</li> <li>•IC 555 Timer – Monostable and Astable Multivibrator Circuits.</li> <li>•IC 565 – PLL Applications.</li> <li>•IC 723 Voltage Regulator using Three Terminal Voltage Regulators –7805, 7809, 7912.</li> </ul>
III	II	R15	A60010	MANAGERIAL ECONOMICS AND FINANCIAL ANALYSIS	<ul style="list-style-type: none"> <li>•Understand the market dynamics namely: demand and supply, demand forecasting and pricing methods.</li> <li>•Gain an insight of how production function is carried out to achieve least cost.</li> <li>•Know how to analyse and interpret the financial statements through ratio analysis.</li> </ul>
III	II	R15	A60018	HUMAN VALUES AND PROFESSIONAL ETHICS (OPEN ELECTIVE)	<p>Students learn the moral issues and problems in engineering ; find the solution to those problems .</p> <ul style="list-style-type: none"> <li>• Students learn the need for professional ethics, codes of ethics and roles, concept of safety, risk assessment.</li> <li>• Students gain exposure to Environment Ethics &amp; computer ethics; know their responsibilities and rights</li> </ul>
III	II	R15	A60117	Disaster Management	<p>Gain an insight into Environmental Hazards &amp; Disasters.</p> <ul style="list-style-type: none"> <li>• Develop an understanding on types of Environmental hazards &amp; Disasters.</li> <li>• Highlight Causes and Hazardous effects of – Volcanoes- earthquakes - Human adjustment, perception &amp; mitigation of earthquake.</li> <li>• Know how Cumulative atmospheric hazards/ disasters, Cyclones – Lightning – Hailstorms Factors &amp; causes of Soil erosion.</li> <li>• To highlight plausible implications Erosion- Conservation measures of Soil Erosion.</li> <li>• Develop an understanding about chemical hazards/ disasters and biological hazards/ disasters, Population Explosion. Emerging approaches in Disaster Management.</li> </ul>
III	II	R15	A60432	VLSI DESIGN	<ul style="list-style-type: none"> <li>• Acquire qualitative knowledge about the fabrication process of integrated circuit using MOS transistors.</li> <li>• Choose an appropriate inverter depending on specifications required for a circuit.</li> <li>• Draw the layout of any logic circuit which helps to understand and estimate parasitic of any logic circuit.</li> <li>• Design different types of logic gates using CMOS inverter and analyze their transfer characteristics.</li> <li>• Provide design concepts required to design building blocks of data path using gates.</li> </ul>
III	II	R15	A60430	MICROPROCESSORS AND MICROCONTROLLERS	<ul style="list-style-type: none"> <li>•The students will learn the internal organisation of popular 8086/8051 microprocessor/ microcontroller.</li> <li>•The students will learn hardware and software interaction and integration.</li> <li>•The students will learn the design of microprocessors/microcontrollers- based systems.</li> </ul>
III	II	R15	A60421	DIGITAL SIGNAL PROCESSING	<ul style="list-style-type: none"> <li>•Perform time, frequency and Z-transform analysis on signal and system.</li> <li>•Understand the inter-relationship between DFT and various transforms.</li> <li>•Understand the significance of various filter structures and effects of roundoff errors.</li> <li>•Design a digital filter for a given specification.</li> <li>+F49•Understand the fast computation of DFT and appreciate the FFT processing.</li> <li>•Understanding the tradeoff between normal and multi rate DSP techniques and finite length word effects.</li> </ul>

III	II	R15	A60494	MICROPROCESSORS AND MICROCONTROLLERS LAB	<ul style="list-style-type: none"> <li>• Student learns to write Programs/experiments for assembler and to execute the same with 8086 and 8051 kits.</li> <li>• Programs for 16 bit arithmetic operations for 8086 (using Various Addressing Modes).</li> <li>• Program for sorting an array for 8086.</li> <li>• Program for searching for a number or character in a string for 8086.</li> <li>• Program for string manipulations for 8086.</li> <li>• Program for digital clock design using 8086.</li> <li>• Interfacing ADC and DAC to 8086.</li> <li>• Parallel communication between two microprocessors using 8255.</li> <li>• Serial communication between two microprocessor kits using 8251.</li> <li>• Interfacing to 8086 and programming to control stepper motor.</li> <li>• Programming using arithmetic, logical and bit manipulation instructions of 8051.</li> <li>• Program and verify Timer/ Counter in 8051.</li> <li>• Program and verify Interrupt handling in 8051</li> <li>• UART Operation in 8051.</li> <li>• Communication between 8051 kit and PC.</li> <li>• Interfacing LCD to 8051.</li> <li>• Interfacing Matrix/ Keyboard to 8051.</li> <li>• Data Transfer from Peripheral to Memory through DMA controller 8237/ 8257</li> </ul>
III	II	R15	A60493	DIGITAL SIGNAL PROCESSING LAB	<ul style="list-style-type: none"> <li>• The student learns to implement the programs software (Using MATLAB / Lab view / C programming/OCTAVE Equivalent) and hardware (Using TI / Analog devices / Motorola / Equivalent DSP processors).</li> <li>• Generation of Sinusoidal waveform / signal based on recursive difference equations.</li> <li>• To find DFT / IDFT of given DT signal.</li> <li>• To find frequency response of a given system given in (Transfer Function/ Differential equation form).</li> <li>• Implementation of FFT of given sequence.</li> <li>• Determination of Power Spectrum of a given signal(s).</li> <li>• Implementation of LP&amp; HP FIR filter for a given sequence.</li> <li>• Implementation of LP &amp; HP IIR filter for a given sequence.</li> <li>• Generation of Sinusoidal signal through filtering.</li> <li>• Generation of DTMF signals.</li> <li>• Implementation of Decimation Process, Interpolation Process, I/D sampling rate converters.</li> <li>• Audio application such as to plot a time &amp; frequency display of microphone plus a cosine using DSP and Read a wav file and match with their respective spectrograms.</li> </ul>
IV	I	R13	A70014	MANAGEMENT SCIENCE	<ul style="list-style-type: none"> <li>• To be able to plan an organizational structure for a given context in the organization</li> <li>• Carry out production operations through Work study.</li> <li>• Understand the markets, customers and competition better and price the given products appropriately.</li> <li>• Ensure quality for a given product or service.</li> <li>• Plan and control the HR function better.</li> <li>• Plan, schedule and control projects through PERT and CPM.</li> <li>• Evolve a strategy for a business or service organization.</li> </ul>
IV	I	R13	A70442	MICROWAVE ENGINEERING	<ul style="list-style-type: none"> <li>• Understand the significance of microwaves and microwave transmission lines.</li> <li>• Analyze the characteristics of microwave tubes and compare them.</li> <li>• Be able to list and explain the various microwave solid state devices.</li> <li>• Can set up a microwave bench for measuring microwave parameters</li> </ul>

IV	I	R13	A70515	COMPUTER NETWORKS	<ul style="list-style-type: none"> <li>• Student can understand and explore the basics of Computer Networks and Various Protocols. She/he will be in a position to understand the World Wide Web concepts.</li> <li>• To be able to demonstrate the TCP/IP and OSI models with merits and demerits.</li> <li>• To explore the various layers of OSI Model.</li> <li>• To introduce UDP and TCP Models.</li> <li>• Students will be in a position to administrate a network and flow of information further he/she can understand easily the concepts of network security, Mobile and ad hoc networks.</li> </ul>
IV	I	R13	A70434	CELLULAR AND MOBILE COMMUNICATION	<ul style="list-style-type: none"> <li>• Student will be able to analyze and design wireless and mobile cellular systems.</li> <li>• Student will be able to understand impairments due to multipath fading channel.</li> <li>• The student will be able understand the fundamental techniques to overcome the different fading effects.</li> <li>• The student will be able to understand Co-channel and Non-Co channel interferences.</li> <li>• The student will be able to familiar with cell coverage for signal and traffic, diversity techniques and mobile antennas.</li> <li>• The student will have an understanding of frequency management, Channel assignment and types of handoff.</li> </ul>
IV	I	R13	A70436	DIGITAL IMAGE PROCESSING	<ul style="list-style-type: none"> <li>• Have an appreciation of the fundamentals of Digital image processing including the topics of filtering, transforms and morphology, and image analysis and compression.</li> <li>• Be able to implement basic image processing algorithms in MATLAB.</li> <li>• Have the skill base necessary to further explore advanced topics of Digital Image Processing.</li> <li>• Be in a position to make a positive professional contribution in the field of Digital Image Processing.</li> <li>• Have a clear impression of the breadth and practical scope of digital image processing.</li> </ul>
IV	I	R13	A70440	EMBEDDED SYSTEM DESIGN	<ul style="list-style-type: none"> <li>• Understand the basics of an embedded system and program an embedded system.</li> <li>• To learn the method of designing an Embedded System for any type of applications.</li> <li>• To understand operating systems concepts, types and choosing RTOS.</li> <li>• Design, implement and test an embedded system.</li> <li>• Learn basic of OS and RTOS.</li> <li>• Understand types of memory and interfacing to external world.</li> <li>• Understand embedded firmware design approaches.</li> </ul>
IV	I	R13	A70086	ADVANCED COMMUNICATION SKILLS LAB	<ul style="list-style-type: none"> <li>• The students can prepare for their careers which may require them to listen to, read, speak and write in English both for their professional and interpersonal communication in the globalised context.</li> <li>• Gathering ideas and information to organise ideas relevantly and coherently.</li> <li>• Engaging in debates, Facing interviews.</li> <li>• Participating in group discussions.</li> <li>• Writing project/research reports/technical reports.</li> <li>• Making oral presentations.</li> <li>• Writing formal letters.</li> <li>• Transferring information from non-verbal to verbal texts and viceversa.</li> <li>• Taking part in social and professional communication.</li> </ul>

IV	I	R13	A70499	MICROWAVE ENGINEERING AND DIGITAL COMMUNICATION LAB	<ul style="list-style-type: none"> <li>•The students can understand microwave Reflex Klystron,Gunn Diode &amp; Directional Coupler Characteristics.</li> <li>•The students can do VSWR, Waveguide Parameters Measurement.</li> <li>•The students can do Measurement of Impedance of a given Load.</li> <li>•The students can do Measurement of Scattering parameters of a Magic Tee, Circulator.</li> <li>•Attenuation Measurement, Microwave Frequency Measurement.</li> <li>•Can perform digital Communication lab on PCM Generation and Detection.</li> <li>•Differential Pulse Code, Delta Modulation.</li> <li>•Time Division Multiplexing of 2 Band Limited Signals.</li> <li>•Frequency, Phase, Amplitude shift keying: Generation and Detection.</li> <li>•Study of the spectral characteristics of PAM, QAM.</li> <li>•DPSK, QPSK Generation and Detection,,: Generation and Detection.</li> </ul>
IV	II	R13	A80452	SATELLITE COMMUNICATIONS (ELECTIVE III)	<ul style="list-style-type: none"> <li>• Students will understand the historical background, basic concepts and frequency allocations for satellite communication.</li> <li>• Students will demonstrate orbital mechanics, launch vehicles and launchers.</li> <li>• Students will demonstrate the design of satellite links for specified C/ N with system design examples.</li> <li>• Students will be able to visualize satellite sub systems like Telemetry, tracking, command and monitoring power systems etc.</li> <li>• Students will understand the various multiple access systems for satellite communication systems and satellite packet communications.</li> </ul>
IV	II	R13	A80450	RADAR SYSTEMS (ELECTIVE IV)	<ul style="list-style-type: none"> <li>• Understands Radar fundamentals and analysis of the radar signals.</li> <li>• Understand various technologies involved in the design of radar transmitters and receivers.</li> <li>• To learn various radars like MTI, Doppler and tracking radars and their comparison.</li> <li>• Understand various radars like MTI, Doppler and tracking radars and their comparison.</li> </ul>
IV	II	R13	A80454	WIRELESS COMMUNICATIONS & NETWORKS (ELECTIVE V)	<ul style="list-style-type: none"> <li>• Understand the principles of wireless communications and fundamentals of wireless networking</li> <li>• Understand cellular system design concepts and analyze various multiple access schemes used in wireless communication.</li> <li>• Understand wireless wide area networks and their performance analysis.</li> <li>• Demonstrate wireless local area networks and their specifications.</li> <li>•Get familiar with some of the existing and emerging wireless standards.</li> <li>• Understand the concept of orthogonal frequency division multiplexing.</li> </ul>
IV	II	R13	A80087	INDUSTRY ORIENTED MINI PROJECT	<ul style="list-style-type: none"> <li>•Formulate a real world problem and develop its requirements.</li> <li>•develop a design solution for a set of requirements.</li> <li>•Test and validate the conformance of the developed prototype against the original requirements of the problem</li> <li>•Work as a responsible member and possibly a leader of a team in developing software solutions. <ul style="list-style-type: none"> <li>•Express technical and behavioural ideas and thought in oral settings.</li> </ul> </li> <li>•Participate in and possibly moderate, discussions that lead to making decisions.</li> <li>•Express technical ideas, strategies and methodologies in written form.</li> <li>•Prepare and conduct oral presentations.</li> <li>•Self learn new tools, algorithms, and/or techniques that contribute to the software solution of the project 10. Generate alternative solutions, compare them and select the optimum one.</li> </ul>
IV	II	R13	A80089	SEMINAR	<p>After learning the contents of this paper the student must be able to:</p> <ol style="list-style-type: none"> <li>1. Select a topic relevant to analysis, design and management of a civil engineering system</li> <li>2. Undertake a critical review of the literature on the chosen topic</li> <li>3. Prepare and present a technical report</li> </ol>

IV	II	R13	A80088	MAJOR PROJECT	<ul style="list-style-type: none"> <li>•Formulate a real world problem and develop its requirements.</li> <li>•Develop a design solution for a set of requirements.</li> <li>•Test and validate the conformance of the developed prototype against the original requirements of the problem.</li> <li>•Work as a responsible member and possibly a leader of a team in developing software solutions .</li> <li>•Express technical and behavioural ideas and thought in oral settings.</li> <li>•Participate in and possibly moderate, discussions that lead to making decisions.</li> <li>•Express technical ideas, strategies and methodologies in written form.</li> <li>•Prepare and conduct oral presentations.</li> <li>•Self learn new tools, algorithms, and/or techniques that contribute to the software solution of the project.</li> <li>•Generate alternative solutions, compare them and select the optimum one.</li> </ul>
IV	II	R13	A80090	COMPREHENSIVE VIVA	<ul style="list-style-type: none"> <li>• Exhibit the strength and grip on the fundamentals of the subjects studied in the previous semesters.</li> <li>• Comprehend for all the courses studied in the entire programme</li> <li>• Viva voce will be conducted towards the end of the semester which will be covering the complete syllabus.</li> <li>• This will test the student's learning and understanding during the course of their post graduate programme.</li> <li>• In doing so, the main objective of this course is to prepare the students to face interview both at the academic and the industrial sector.</li> </ul>

**DEPARTMENT OF CIVIL ENGINEERING**

Year	Semester	Regulation	Course Code	Course Name	Course Outcomes
I-YEAR	I SEM	R16	MA101BS	MATHEMATICS-I	<p>After learning the contents of this paper the student must be able to</p> <ul style="list-style-type: none"> <li>•write the matrix representation of a set of linear equations and to analyze the solution of the system of equations</li> <li>•find the Eigen values and Eigen vectors which come across under linear transformations</li> <li>•find the extreme values of functions of two variables with/ without constraints.</li> <li>•identify whether the given first order DE is exact or not</li> <li>•solve higher order DE's and apply them for solving some real world problems</li> </ul>
I-YEAR	I SEM	R16	MA102BS	MATHEMATICS-II	<p>After learning the contents of this course the student must be able to</p> <ul style="list-style-type: none"> <li>•use Laplace transform techniques for solving DE's</li> <li>•evaluate integrals using Beta and Gamma functions</li> <li>•evaluate the multiple integrals and can apply these concepts to find areas, volumes, moment of inertia etc of regions on a plane or in space</li> <li>•evaluate the line, surface and volume integrals and converting them from one to Another</li> </ul>
I-YEAR	I SEM	R16	PH103BS	ENGINEERING PHYSICS	<p>after completion of this course the student is able to</p> <ul style="list-style-type: none"> <li>•Realize the importance of light phenomena in thin films and resolution.</li> <li>•Learn principle, working of various laser systems and light propagation through optical fibers.</li> <li>•Distinguish various crystal systems and understand atomic packing factor.</li> <li>•Know the various defects in crystals.</li> </ul>
I-YEAR	I SEM	R16	CS104ES	COMPUTER PROGRAMMING IN C	<ul style="list-style-type: none"> <li>•Demonstrate the basic knowledge of computer hardware and software.</li> <li>•Ability to write algorithms for solving problems.</li> <li>•Ability to draw flowcharts for solving problems.</li> <li>•Ability to code a given logic in C programming language.</li> <li>•Gain knowledge in using C language for solving problems.</li> </ul>
I-YEAR	I SEM	R16	ME105ES	ENGINEERING MECHANICS	<ul style="list-style-type: none"> <li>•To understand the resolving forces and moments for a given force system</li> <li>•To analyze the types of friction for moving bodies and problems related to friction.</li> <li>•To determine the centroid and second moment of area</li> </ul>
I-YEAR	I SEM	R16	ME106ES	ENGINEERING GRAPHICS	<ul style="list-style-type: none"> <li>•Preparing working drawings to communicate the ideas and information.</li> <li>•Read, understand and interpret engineering drawings.</li> </ul>

I- YEAR	I SEM	R16	PH107BS	ENGINEERING PHYSICS LAB	<ul style="list-style-type: none"> <li>•Use CRO, signal generator, spectrometer, polarimeter and GM counter for making measurements</li> <li>•Test optical components using principles of interference and diffraction of light</li> <li>•Determine the selectivity parameters in electrical circuits</li> <li>•Determine the width of narrow slits, spacing between close rulings using lasers and</li> <li>•appreciate the accuracy in measurements</li> </ul>
I- YEAR	I SEM	R16	CS108ES	COMPUTER PROGRAMMING IN C LAB	<ul style="list-style-type: none"> <li>•Ability to design and test programs to solve mathematical and scientific problems.</li> <li>•Ability to write structured programs using control structures and functions.</li> </ul>
I- YEAR	I SEM	R16	EA109MC	NSS	<ul style="list-style-type: none"> <li>•understanding the community in which they work</li> <li>•Understanding themselves in relation to their community</li> <li>•Identifying the needs and problems of the community and involving them in problem-solving</li> <li>•Developing among themselves a sense of social and civic responsibility</li> <li>•Utilising their knowledge in finding practical solutions to individual and community problems</li> <li>•Developing competence required for group-living and sharing of responsibilities</li> <li>•Gaining skills in mobilising community participation</li> <li>•Acquiring leadership qualities and democratic attitudes</li> <li>•Developing capacity to meet emergencies and natural disasters and practise national integration and social harmony</li> </ul>
I- YEAR	II SEM	R16	AP201BS	APPLIED PHYSICS	<p>after completion of this course the student is able to</p> <ul style="list-style-type: none"> <li>• Realize the importance of elastic behavior of materials.</li> <li>• Learn Sabine's formula for reverberation time and apply in architecture of buildings.</li> <li>• Learn various methods of producing ultrasonics and their uses.</li> <li>• Learn magnetic, dielectric and superconducting properties of materials and their applications.</li> </ul>
I- YEAR	II SEM	R16	CH202BS	ENGINEERING CHEMISTRY	<ul style="list-style-type: none"> <li>• Students will gain the basic knowledge of electrochemical procedures related to corrosion and its control.</li> <li>• They can understand the basic properties of water and its usage in domestic and industrial purposes.</li> <li>• They learn the use of fundamental principles to make predictions about the general properties of materials.</li> <li>• They can predict potential applications of chemistry and practical utility in order to become good engineers and entrepreneurs</li> </ul>
I- YEAR	II SEM	R16	MA203BS	MATHEMATICS - III	<p>After learning the contents of this course the student must be able to</p> <ul style="list-style-type: none"> <li>• differentiate among random variables involved in the probability models which are useful for all branches of engineering</li> <li>• calculate mean, proportions and variances of sampling distributions and to make important decisions for few samples which are taken from a large data</li> <li>• solve the tests of ANOVA for classified data</li> <li>• find the root of a given equation and solution of a system of equations</li> <li>• fit a curve for a given data</li> <li>• find the numerical solutions for a given first order initial value problem</li> </ul>
I- YEAR	II SEM	R16	EN204HS	PROFESSIONAL COMMUNICATION IN ENGLISH	<p>Students will be able to:</p> <ul style="list-style-type: none"> <li>• Use English Language effectively in spoken and written forms.</li> <li>• Comprehend the given texts and respond appropriately.</li> <li>• Communicate confidently in formal and informal contexts.</li> </ul>

I- YEAR	II SEM	R16	EE205ES	BASIC ELECTRICAL AND ELECTRONICS ENGINEERING	After this course, the student will be able <ul style="list-style-type: none"> <li>• To analyze and solve electrical circuits using network laws and theorems.</li> <li>• To identify and characterize diodes and various types of transistors.</li> </ul>
I- YEAR	II SEM	R16	CH206BS	ENGINEERING CHEMISTRY LAB	<ul style="list-style-type: none"> <li>• Estimation of Ferrous ion by Dichrometry.</li> <li>• Estimation of hardness of water by Complexometric method using EDTA.</li> <li>• Estimation of Ferrous and Ferric ions in a given mixture by Dichrometry.</li> <li>• Estimation Ferrous ion by Permanganometry.</li> <li>• Estimation of copper by Iodometry.</li> <li>• Estimation of percentage of purity of MnO<sub>2</sub> in pyrolusite</li> <li>• Determination of percentage of available chlorine in bleaching powder.</li> <li>• Determination of salt concentration by ion- exchange resin.</li> <li>• Preparation of Bakelite and urea formaldehyde resin.</li> </ul>
I- YEAR	II SEM	R16	EN207HS	ENGLISH LANGUAGE COMMUNICATION SKILLS LAB	Students will be able to attain: <ul style="list-style-type: none"> <li>• Better understanding of nuances of English language through audio- visual experience and group activities</li> <li>• Neutralization of accent for intelligibility</li> <li>• Speaking skills with clarity and confidence which in turn enhances their employability skills.</li> </ul>
I- YEAR	II SEM	R16	ME208ES	ENGINEERING WORKSHOP	At the end of the course, the student will be able to: <ul style="list-style-type: none"> <li>• Study and practice on machine tools and their operations</li> <li>• Practice on manufacturing of components using workshop trades including plumbing, fitting, carpentry, foundry, house wiring and welding.</li> <li>• Identify and apply suitable tools for different trades of Engineering processes including drilling, material removing, measuring, chiseling.</li> <li>• Apply basic electrical engineering knowledge for house wiring practice.</li> </ul>
I- YEAR	II SEM	R16	*EA209MC	NCCINSO	student must be able to: <ul style="list-style-type: none"> <li>• NCC has adopted community development activities with the aim of imbuing amongst cadets selfless service to the community, dignity of labour importance of self help, need to protect the environment and to assist weaker sections of the society in their upliftment.</li> </ul>
II YEAR	I SEM	R16	MA301BS	MATHEMATICS-IV	After learning the contents of this paper the student must be able to <ul style="list-style-type: none"> <li>• Analyze the complex functions with reference to their analyticity, integration using Cauchy's integral theorem</li> <li>• Find the Taylor's and Laurent's series expansion of complex functions</li> <li>• The bilinear transformation</li> <li>• Express any periodic function in term of sines and cosines</li> <li>• Express a non-periodic function as integral representation</li> <li>• Analyze one dimensional wave and heat equation</li> </ul>
II YEAR	I SEM	R16	CE302ES	STRENGTH OF MATERIALS-I	At the end of the course, the student will be able to: <ul style="list-style-type: none"> <li>• Analyze the statically determinate and indeterminate problems.</li> <li>• Determine the stresses and strains in the members subjected to axial, bending.</li> <li>• Evaluate the slope and deflection of beams subjected to loads.</li> <li>• Determine the principal stresses and strains in structural members.</li> </ul>
II YEAR	I SEM	R16	CE303ES	FLUID MECHANICS-I	At the end of the course, the student will be able to: <ul style="list-style-type: none"> <li>• Apply conservation laws to derive governing equations of fluid flows.</li> <li>• Compute hydrostatic and hydrodynamic forces.</li> <li>• Analyze and design simple pipe systems.</li> <li>• Apply principles of dimensional analysis to design experiments.</li> <li>• Compute drag and lift coefficients.</li> </ul>
II YEAR	I SEM	R16	CE304ES	BUILDING MATERIAL, CONSTRUCTION AND PLANNING	At the end of the course, the student will be able to: <ul style="list-style-type: none"> <li>• Identify various building materials and select suitable materials to be used in construction, how to place formwork, standards in building planning</li> </ul>

II YEAR	I SEM	R16	CE305ES	SURVEYING	At the end of the course, the student will be able to: <ul style="list-style-type: none"> <li>• Calculate angles, distances and levels</li> <li>• Identify data collection methods and prepare field notes</li> <li>• Understand the working principles of survey instruments</li> <li>• Estimate measurement errors and apply corrections</li> <li>• Interpret survey data and compute areas and volumes</li> </ul>
II YEAR	I SEM	R16	CE308ES	SURVEYING LAB – I	At the end of the course, the student will be able to: <ul style="list-style-type: none"> <li>• Practically able to draw plans &amp; maps to determine the areas before taking up any civil engineering works.</li> </ul>
II YEAR	I SEM	R16	CE307ES	COMPUTER AIDED DESIGN – I LAB	At the end of the course, the student will be able to: <p>Master the usage of Autocad commands for drawing 2D &amp; 3D building drawings required for different civil engg applications.</p> <ul style="list-style-type: none"> <li>• Introduction to computer aided drafting</li> <li>• Software for CAD – Introduction to different softwares</li> <li>• Practice exercises on CAD software</li> <li>• Drawing of plans of buildings using software <ul style="list-style-type: none"> <li>a) Single storied buildings b) multi storied buildings</li> </ul> </li> <li>• Developing sections and elevations for <ul style="list-style-type: none"> <li>a) Single storied buildings b) multi storied buildings</li> </ul> </li> <li>• Detailing of building components like Doors, Windows, Roof Trusses etc. using CAD softwares</li> <li>• Exercises on development of working drawings of buildings</li> </ul>
II YEAR	I SEM	R16	CE306ES	STRENGTH OF MATERIAL LAB	At the end of the course, the student will be able to: <ul style="list-style-type: none"> <li>• Conduct tension test on Materials like steel etc.</li> <li>• Conduct compression tests on spring, wood and concrete</li> <li>• Conduct flexural and torsion test to determine elastic constants</li> <li>• Determine hardness of metals</li> </ul>
II YEAR	I SEM	R16	*MC300HS	GENDER SENSITIZATION	<ul style="list-style-type: none"> <li>• Students will have developed a better understanding of important issues related to gender in contemporary India.</li> <li>• Students will be sensitized to basic dimensions of the biological, sociological, psychological and legal aspects of gender. This will be achieved through discussion of materials derived from research, facts, everyday life, literature and film.</li> <li>• Students will attain a finer grasp of how gender discrimination works in our society and how to counter it.</li> <li>• Students will acquire insight into the gendered division of labour and its relation to politics and economics.</li> <li>• Men and women students and professionals will be better equipped to work and live together as equals.</li> <li>• Students will develop a sense of appreciation of women in all walks of life.</li> <li>• Through providing accounts of studies and movements as well as the new laws that provide protection and relief to women, the textbook will empower students to understand and respond to gender violence.</li> </ul>
II YEAR	II SEM	R16	CE401ES	STRENGTH OF MATERIALS - II	At the end of the course, the student will be able to <ul style="list-style-type: none"> <li>• Determine stresses in the member subjected to Torsion</li> <li>• Analyze columns and struts</li> <li>• Understand the concept of direct and bending stresses</li> <li>• Analyze and design springs, thin and thick cylinders</li> <li>• Understand the concept of unsymmetrical bending.</li> </ul>
II YEAR	II SEM	R16	CE402ES	FLUID MECHANICS - II	At the end of the course, the student will be able to: <ul style="list-style-type: none"> <li>• Understand the concepts o channel flows.</li> <li>• Compute flow profiles in channel transitions and analyze hydraulic transients</li> <li>• Design the working proportions of hydraulic machines</li> </ul>



II YEAR	II SEM	R16	CE403ES	STRUCTURAL ANALYSIS	<p>At the end of the course, the student will be able to:</p> <ul style="list-style-type: none"> <li>Analyze Perfect , Imperfect And Redundant Frames</li> <li>Formulate Equilibrium and compatibility equations for structural members</li> <li>Analyze one dimensional and two dimensional problems using classical methods</li> <li>Analyze indeterminate structures</li> <li>Analyze structures for gravity loads, moving loads and lateral loads</li> </ul>
II YEAR	II SEM	R16	CV404ES	ENGINEERING GEOLOGY	<p>At the end of the course, the student will be able to:</p> <ul style="list-style-type: none"> <li>Understand weathering process and mass movement</li> <li>Distinguish geological formations</li> <li>Identify geological structures and processes for rock mass quality</li> <li>Identify subsurface information and groundwater potential sites through geophysical investigations</li> <li>Apply geological principles for mitigation of natural hazards and select sites for dams and tunnels</li> </ul>
II YEAR	II SEM	R16	SM405MS	BUSINESS ECONOMIC AND FINANCIAL ANALYSIS	<p>The students will understand the various Forms of Business and the impact of economic variables on the Business. The Demand, Supply, Production, Cost, Market Structure, Pricing aspects are learnt. The Students can study the firm's financial position by analysing the Financial Statements of a Company.</p>
II YEAR	II SEM	R16	CE406ES	FLUID MECHANICS LAB	<p>At the end of the course, the student will be able to:</p> <ul style="list-style-type: none"> <li>Determine coefficient of discharge for orifice and mouthpiece.</li> <li>Calibrate notches venturimeter orifice meters</li> <li>Determine minor losses in pipes</li> </ul>
II YEAR	II SEM	R16	CE408ES	SURVEYING - II LAB	<p>At the end of the course, the student will be able to:</p> <p>Perform surveying on any civil engineering work</p> <ul style="list-style-type: none"> <li>Determine of area using total station</li> <li>Traversing using total station</li> <li>Contouring using total station</li> <li>Determination of remote height using total station</li> <li>Stake out using total station</li> <li>Distance, gradient, differential height between two inaccessible points using total Station.</li> <li>Curve settling using total station</li> <li>Resection using total station</li> <li>Setting out works for buildings and pipe lines</li> <li>Finding position of stations using G.P.S</li> </ul>
II YEAR	II SEM	R16	CV407ES	ENGINEERING GEOLOGY LAB	<p>At the end of the course, the student will be able to:</p> <ul style="list-style-type: none"> <li>Identify the various rocks, minerals depending on geological classifications</li> <li>Study of physical properties and identification of minerals referred under theory.</li> <li>Megascopic description and identification of rocks referred under theory.</li> <li>Microscopic study of rocks.</li> <li>Interpretation and drawing of sections for geological maps showing tilted beds, faults, Uniformities etc.</li> <li>Simple Structural Geology problems.</li> <li>Electrical resistivity meter.</li> </ul>
II YEAR	II SEM	R16	*MC400ES	ENVIRONMENTAL SCIENCE AND TECHNOLOGY	<p>At the end of the course, the student will be able to:</p> <ul style="list-style-type: none"> <li>Based on this course, the Engineering graduate will understand /evaluate / develop technologies on the basis of ecological principles and environmental regulations which inturn helps in sustainable development</li> </ul>

III YEAR	I SEM	R15	A50116	CONCRETE TECHNOLOGY	<p>At the end of the course, the student will be able to:</p> <ul style="list-style-type: none"> <li>• Identify Quality Control tests on concrete making materials</li> <li>• Understand the behavior of fresh and hardened concrete</li> <li>• Design concrete mixes as per IS and ACI codes</li> <li>• Understand the durability requirements of concrete</li> <li>• Understand the need for special concretes</li> </ul>
III YEAR	I SEM	R15	A50121	REINFORCED CONCRETE STRUCTURES DESIGN & DRAWING	<p>At the end of the course, the student will be able to:</p> <ul style="list-style-type: none"> <li>• Design RC Structural elements</li> <li>• Design the Reinforced Concrete beams using limit state Design</li> <li>• Design Reinforced Concrete slabs</li> <li>• Design the Reinforced Concrete Columns and footings</li> <li>• Design structures for serviceability</li> <li>• Design staircases, canopy</li> </ul>
III YEAR	I SEM	R15	A50118	ENGINEERING GEOLOGY	<p>At the end of the course, the student will be able to:</p> <ul style="list-style-type: none"> <li>• Understand weathering process and mass movement</li> <li>• Distinguish geological formations</li> <li>• Identify geological structures and processes for rock mass quality</li> <li>• Identify subsurface information and groundwater potential sites through geophysical Investigations</li> <li>• Apply geological principles for mitigation of natural hazards and select sites for dams and tunnels</li> </ul>
III YEAR	I SEM	R15	A50120	GEOTECHNICAL ENGINEERING	<p>At the end of the course, the student will be able to:</p> <ul style="list-style-type: none"> <li>• basics of soil concepts,</li> <li>• soil relationship with other terms,</li> <li>• strength of soil,</li> <li>• water movement in soil and its applications</li> </ul>
III YEAR	I SEM	R15	A50122	WATER RESOURCES ENGINEERING – I	<p>At the end of the course, the student will be able to:</p> <ul style="list-style-type: none"> <li>• Analyze hydro-meteorological data</li> <li>• Estimate abstractions from precipitation</li> <li>• Compute yield from surface and subsurface basin</li> <li>• Develop rainfall-runoff models</li> <li>• Formulate and solve hydrologic flood routing models</li> <li>• Estimate runoff, design discharge from catchment</li> </ul>
III YEAR	I SEM	R15	A50117	OPEN ELECTIVE: DISASTER MANAGEMENT	<p>At the end of the course, the student will be able to:</p> <ul style="list-style-type: none"> <li>• Understand how learning and knowing about disasters</li> <li>• A basic understanding of Prevention, Mitigation, Preparedness, Response and Recovery</li> <li>• Describe different types of natural and man- made disasters. Work theoretically and practically in the processes of disaster management (disaster risk reduction, response, and recovery)</li> <li>• Describe endogenous and exogenous hazards their harmful effects to the environment.</li> </ul>
III YEAR	I SEM	R15	A50181	FLUID MECHANICS & HYDRAULIC MACHINERY AND LAB	<p>At the end of the course, the student will be able to:</p> <ul style="list-style-type: none"> <li>• Compute drag coefficients</li> <li>• Test the performance of pumps and turbines</li> <li>• Determine Manning's and Chezy's coefficients for smooth and rough channels</li> <li>• Determine Energy loss in Hydraulic jump and Calibrate standing wave flume</li> </ul>
III YEAR	I SEM	R15	A50191	ENGINEERING GEOLOGY LAB	<p>At the end of the course, the student will be able to:</p> <ul style="list-style-type: none"> <li>• Understand weathering process and mass movement</li> <li>• Distinguish geological formations</li> <li>• Identify geological structures and processes for rock mass quality</li> <li>• Identify subsurface information and groundwater potential sites through geophysical Investigations</li> <li>• Apply geological principles for mitigation of natural hazards and select sites for dams and tunnels</li> </ul>

III YEAR	II SEM	R15	A60130	STEEL STRUCTURES DESIGN AND DRAWING	At the end of the course, the student will be able to <ul style="list-style-type: none"> <li>• Design tension and compression members</li> <li>• Design beams and beam columns</li> <li>• Design bolt and weld connections</li> <li>• Design built up members and Column base</li> <li>• Design of plate girders and Roof Trusses</li> </ul>
III YEAR	II SEM	R15	A60119	ENVIRONMENTAL ENGINEERING	At the end of the course, the student will be able to: <ul style="list-style-type: none"> <li>• Analyze characteristics of water and wastewater</li> <li>• Estimate the quantity of drinking water and domestic wastewater generated</li> <li>• Design components of water supply systems Design sewerage system</li> </ul>
III YEAR	II SEM	R15	A60132	TRANSPORTATION ENGINEERING - I	At the end of the course, the student will be able to: <ul style="list-style-type: none"> <li>• Understand the development,planning,network patterns etc.</li> <li>• determine geometrical esign controls, sight distance.</li> <li>• traffic studies , cause and preventive easures of accidents etc.</li> <li>• channelized ad unchannelized intersectionsad is concepts.</li> <li>• maintainence of highway materials and overall constructions.</li> </ul>
III YEAR	II SEM	R15	A60126	FOUNDATION ENGINEERING	At the end of the course, the student will be able to: <ul style="list-style-type: none"> <li>• soil exploration methods, peneteration tests.</li> <li>• slopes failures and its safety measures, stability of slopes unde different conditions.</li> <li>• rankines theory of earth pressure,coloumbs earth pressure theory.</li> <li>• shallow foundations as per terzagi, myerhof, skempton and is methods.</li> <li>• different shapes of wells, components of wells,sinking –tilts &amp; shifts.</li> </ul>
III YEAR	II SEM	R15	A60131	STRUCTURAL ANALYSIS - II	At the end of the course, the student will be able to: <ul style="list-style-type: none"> <li>•analysis of frames by kanis method and moment distribution method.</li> <li>• analysis of frames by slope deflection method, two hinged arches.</li> <li>• analysis of multistory frames by portal methods, cantilever methods, factor method.</li> <li>• Analyze multistory frames subjected to gravity loads and lateral loads</li> </ul>
III YEAR	II SEM	R15	A60127	ELECTIVE-I : GROUND IMPROVEMENT TECHNIQUES	At the end of the course, the student will be able to <ul style="list-style-type: none"> <li>• identification of soil types,</li> <li>• dewatering methods , design of it.</li> <li>• modifications by admixtures , grouting, thermal modification, ground freezing.</li> <li>• soil reinforcements, insitu ground reinforcements.</li> <li>• deep compaction techniques, dynamic tamping and compaction piles.</li> </ul>
III YEAR	II SEM	R15	A60194	GEOTECHNICAL ENGINEERING LABORATORY	At the end of the course, the student will be able to: <ul style="list-style-type: none"> <li>• Determine index properties of soils</li> <li>• Classify soils</li> <li>• Determine engineering properties of soils</li> </ul>
III YEAR	II SEM	R15	A60086	ADVANCED COMMUNICATION SKILLS LAB	At the end of the course, the student will be able to: <ul style="list-style-type: none"> <li>• Accomplishment of sound vocabulary and list proper use contextually</li> <li>Flair in writing and felicity in written expression.</li> <li>Enhanced job prospects</li> <li>• Effective speaking abilities</li> </ul>
IV YEAR	I SEM	R13	A70140	GIS & REMOTE SENSING	At the end of the course, the student will be able to: <ul style="list-style-type: none"> <li>• types of aerial photographs.</li> <li>• concept of remote sensing,data collection its limitation &amp; advantages.</li> <li>• components of GIS, coordinate systems.</li> <li>• topology and its importance.</li> <li>•types of raste data, raster data structures, conversion of existing data etc.</li> </ul>
IV YEAR	I SEM	R13	A70139	ELECTIVE III: EARTH AND ROCKFILL DAMS AND SLOPE STABILITY	At the end of the course, the student will be able to: <ul style="list-style-type: none"> <li>selection of site,merits and demerits ,classifications,failures,safe design..</li> <li>nature and importance of failure..</li> <li>types of failures, total stress analysis vs effective stress analysis.</li> <li>methods of slices, effect of tension cracks,vertical cuts, bishop analysis.</li> <li>requirement of compacted rockfill, shear, strength.</li> </ul>

IV YEAR	I SEM	R13	A70133	WATER RESOURCES ENGINEERING - II	<p>At the end of the course, the student will be able to:</p> <ul style="list-style-type: none"> <li>• types of reservoirs, selection of site, Factors governing selection of site of dam.</li> <li>• types of earth dams, cause sand failures of earth dams, criteria for safe design of earth dams.</li> <li>• types of diversion headworks, weirs and barrages etc.</li> <li>• forces acting on gravity dams , causes and failures.</li> <li>• types of falls and their locations, design principle of Notch fall and Sarada type fall.</li> </ul>
IV YEAR	I SEM	R13	A700138	ESTIMATION & COSTING	<p>At the end of the course, the student will be able to:</p> <ul style="list-style-type: none"> <li>• standard units principle of working out quantities for details and abstract estimates.</li> <li>• earthwork for roads and canals.</li> <li>• rate analysis- workingout data for various items of work.</li> <li>• bar bending schedules, types and conditions of contracts.</li> <li>• valuation of buildings as per standard specifications.</li> </ul>
IV YEAR	I SEM	R13	A70143	TRANSPORTATION ENGINEERING - II	<p>At the end of the course, the student will be able to:</p> <ul style="list-style-type: none"> <li>• cross section of permanent way, theories related to creep.</li> <li>• degree of curve, point, crossing- signaling and interlocking.</li> <li>• airport site selection, terminal area, layout etc.</li> <li>• requirements of port and harbor, classifications, features etc.</li> <li>• intelligent transport systems-user services, overviews in developed countries</li> </ul>
IV YEAR	I SEM	R13	A70145	ELECTIVE II: WATERSHED MANAGEMENT	<p>After learning the contents of this paper the student must be able to:</p> <ul style="list-style-type: none"> <li>• study the relevant characteristics of a watershed</li> <li>• sustainable distribution of its resources and</li> <li>• the process of creating and implementing plans, programs, and projects to sustain and enhance watershed</li> </ul>
IV YEAR	I SEM	R13	A70195	CONCRETE & HIGHWAY MATERIALS LAB	<p>At the end of the course, the student will be able to:</p> <ul style="list-style-type: none"> <li>• road aggregates, bituminous materials.</li> <li>• tests on cement.</li> <li>• normal consistency of cement</li> <li>• initial and final setting time of cement.</li> <li>• non destructive testing on concrete</li> </ul>
IV YEAR	I SEM	R13	A70192	ENVIRONMENTAL ENGINEERING LAB	<p>At the end of the course, the student will be able to:</p> <ul style="list-style-type: none"> <li>• Determination of PH and turbidity, alkalinity, chlorides, iron, cod, bod etc.</li> <li>• Analyze characteristics of water and wastewater</li> <li>• Estimate the quantity of drinking water and domestic wastewater generated</li> <li>• Design components of water supply systems Design sewerage system</li> </ul>
IV YEAR	II SEM	R13	A80151	ELECTIVE:IV REHABILITATION AND RETROFITTING OF STRUCTURES	<p>At the end of the course, the student will be able to</p> <ul style="list-style-type: none"> <li>• deterioration of structures, distress in structures, causes and revention, types of damage.</li> <li>• corrosion of steel reinforcement, causes mechanism and prevention.</li> <li>• inspection and testing- symptoms and diagnosis of distress.</li> <li>• common types of repairs and repairs in concrete structures, under water structures etc ., strengthening.</li> <li>• health monitoring of structures- use of sensors- Building instrumentation.</li> </ul>
IV YEAR	II SEM	R13	A80150	PRESTRESSED CONCRETE STRUCTURES	<p>At the end of the course, the student will be able to:</p> <ul style="list-style-type: none"> <li>• general principles of pre stressing, pre tensioning and post tensioning, advantages and its limitations.</li> <li>• loss of prestressed in pre tension and post tension members due to various causes.</li> <li>• analysis of sections for flexure , shear etc, as per Indian standards.</li> <li>• transfer of prestressed in pretension members.</li> <li>• composite beams- types – propped and unpropped, stress distribution, deflections- Design considerations.</li> </ul>

IV YEAR	II SEM	R13	A80146	CONSTRUCTION MANAGEMENT	At the end of the course, the student will be able to: <ul style="list-style-type: none"> <li>• management processes- roles , theories , responsibilities. Decision making.</li> <li>• classification of construction projects, construction stages, scientific methods of management.</li> <li>• planning resources, plans of scheduling etc.,</li> <li>• types of contracts and contract document- tender and its document.</li> <li>• management information systems- Labour regulation, welfare regulation, safety in constructions etc.</li> </ul>
IV YEAR	II SEM	R13	A80087	INDUSTRY ORIENTED MINI PROJECT	After learning the contents of this paper the student must be able to: <ul style="list-style-type: none"> <li>• analyse the approximate cost of any engineering structure,</li> <li>• to estimate the quantity of materials &amp; Labours.</li> </ul>
IV YEAR	II SEM	R13	A80089	SEMINAR	After learning the contents of this paper the student must be able to: <ul style="list-style-type: none"> <li>• Select a topic relevant to analysis, design and management of a civil engineering system</li> <li>• Undertake a critical review of the literature on the chosen topic</li> <li>• Prepare and present a technical report</li> </ul>
IV YEAR	II SEM	R13	A80088	PROJECT WORK	After learning the contents of this paper the student must be able to: <ul style="list-style-type: none"> <li>• Work in a team to select a problem for project work</li> <li>• Review and evaluate the available literature on the chosen problem</li> <li>• Formulate the methodology to solve the identified problem</li> <li>• Apply the principles, tools and techniques to solve the problem</li> <li>• Prepare and present project report</li> </ul>
IV YEAR	II SEM	R13	A80090	COMPREHENSIVE VIVA	After learning the contents of this paper the student must be able to: <ul style="list-style-type: none"> <li>• This will test the student's learning and understanding during the course of their post graduate programme.</li> <li>• In doing so, to prepare the students to face interview both at the academic and the industrial sector.</li> </ul>

**DEPARTMENT OF INFORMATION TECHNOLOGY**

Year	Semester	Regulation	Course Code	Course Name	Course Outcomes
I	I	R16	MA101BS	MATHEMATICS - I	<ol style="list-style-type: none"> <li>1. write the matrix representation of a set of linear equations and to analyze the solution of the system of equations find the Eigen values and Eigen vectors which come across under linear transformations</li> <li>2. find the extreme values of functions of two variables with/ without constraints.</li> <li>3. identify whether the given first order DE is exact or not</li> <li>4. solve higher order DE's and apply them for solving some real world problems</li> </ol>
I	I	R16	CH102BS	ENGINEERING CHEMISTRY	<ol style="list-style-type: none"> <li>1. Students will gain the basic knowledge of electrochemical procedures related to corrosion and its control.</li> <li>2. They can understand the basic properties of water and its usage in domestic and industrial purposes.</li> <li>3. They learn the use of fundamental principles to make predictions about the general properties of materials.</li> <li>4. They can predict potential applications of chemistry and practical utility in order to become good engineers and entrepreneurs.</li> </ol>
I	I	R16	PH103BS	ENGINEERING PHYSICS -I	<ol style="list-style-type: none"> <li>1. Realize the importance of light phenomena in thin films and resolution.</li> <li>2. Learn principle, working of various laser systems and light propagation through optical fibers.</li> <li>3. Distinguish various crystal systems and understand atomic packing factor.</li> <li>4. Know the various defects in crystals.</li> </ol>
I	I	R16	EN104HS	PROFESSIONAL COMMUNICATION IN ENGLISH	<ol style="list-style-type: none"> <li>1. Use English Language effectively in spoken and written forms.</li> <li>2. Comprehend the given texts and respond appropriately.</li> <li>3. Communicate confidently in formal and informal contexts</li> </ol>
I	I	R16	ME105ES	ENGINEERING MECHANICS	<ol style="list-style-type: none"> <li>1. To understand the resolving forces and moments for a given force system</li> <li>2. To analyze the types of friction for moving bodies and problems related to friction.</li> <li>3. To determine the centroid and second moment of area</li> </ol>

I	I	R16	EE106ES	BASIC ELECTRICAL AND ELECTRONICS ENGINEERING	<ol style="list-style-type: none"> <li>1. To analyze and solve problems of electrical circuits using network laws and theorems.</li> <li>2. To identify and characterize diodes and various types of transistors.</li> </ol>
I	I	R16	EN107HS	ENGLISH LANGUAGE COMMUNICATION SKILLS LAB	<ol style="list-style-type: none"> <li>1. Better understanding of nuances of English language through audio-visual experience and group activities</li> <li>2. Neutralization of accent for intelligibility</li> <li>3. Speaking skills with clarity and confidence which in turn enhances their employability</li> </ol>
I	I	R16	ME108ES	ENGINEERING WORKSHOP	<ol style="list-style-type: none"> <li>1. Study and practice on machine tools and their operations</li> <li>2. Practice on manufacturing of components using workshop trades including plumbing, fitting, carpentry, foundry, house wiring and welding.</li> <li>3. Identify and apply suitable tools for different trades of Engineering processes including drilling, material removing, measuring, chiseling.</li> <li>4. Apply basic electrical engineering knowledge for house wiring practice.</li> </ol>
I	I	R16	EA109MC	NSS	<p>The main outcomes of National Service Scheme (NSS) being:</p> <ul style="list-style-type: none"> <li>understanding the community in which they work</li> <li>Understanding themselves in relation to their community</li> <li>Identifying the needs and problems of the community and involving them in problem-solving</li> <li>Developing among themselves a sense of social and civic responsibility</li> <li>Utilising their knowledge in finding practical solutions to individual and community problems</li> <li>Developing competence required for group-living and sharing of responsibilities</li> <li>Gaining skills in mobilising community participation</li> <li>Acquiring leadership qualities and democratic attitudes</li> <li>Developing capacity to meet emergencies and natural disasters and practise national integration and social harmony</li> </ul>
I	II	R16	PH201BS	ENGINEERING PHYSICS - II	<ol style="list-style-type: none"> <li>1. Realize the importance of behavior of a particle quantummechanically.</li> <li>2. Learn concentration estimation of charge carriers in semiconductors.</li> <li>3. Learn various magnetic dielectric properties and apply them in engineering applications.</li> <li>4. Know the basic principles and applications of superconductors.</li> </ol>
I	II	R16	MA202BS	MATHEMATICS - II	<ol style="list-style-type: none"> <li>1. Differentiate among random variables involved in the probability models which are useful for all branches of engineering</li> <li>2. Calculate mean, proportions and variances of sampling distributions and to make important decisions for few samples which are taken from a large data</li> <li>3. Solve the tests of ANOVA for classified data</li> <li>4. Find the root of a given equation and solution of a system of equations</li> <li>5. Fit a curve for a given data</li> <li>6. Find the numerical solutions for a given first order initial value problem</li> </ol>
I	II	R16	MA203BS	MATHEMATICS - III	<ul style="list-style-type: none"> <li>•differentiate among random variables involved in the probability models which are useful for all branches of engineering.</li> <li>•calculate mean, proportions and variances of sampling distributions and to make important decisions for few samples which are taken from a large data.</li> <li>•solve the tests of ANOVA for classified data.</li> <li>•find the root of a given equation and solution of a system of equations.</li> <li>•fit a curve for a given data.</li> <li>•find the numerical solutions for a given first order initial value problem</li> </ul>
I	II	R16	CS204ES	COMPUTER PROGRAMMING IN C	<ol style="list-style-type: none"> <li>1. Demonstrate the basic knowledge of computer hardware and software.</li> <li>2. Ability to write algorithms for solving problems.</li> <li>3. Ability to draw flowcharts for solving problems.</li> <li>4. Ability to code a given logic in C programming language.</li> <li>5. Gain knowledge in using C language for solving problems.</li> </ol>
I	II	R16	ME205ES	ENGINEERING GRAPHICS	<ol style="list-style-type: none"> <li>1. Ability to prepare working drawings to communicate the ideas and information.</li> <li>2. Ability to read, understand and interpret engineering drawings.</li> </ol>

I	II	R16	CH206BS	ENGINEERING CHEMISTRY LAB	<ul style="list-style-type: none"> <li>•Students are able to estimate the impurities present in water.</li> <li>•Ability to select lubricants for various purposes.</li> <li>•Ability to prepare advanced polymer materials.</li> <li>•Ability to know the strength of an acid present in secondary batteries.</li> <li>•Ability to find the Fe<sup>2+</sup>, Ca &amp; Cl<sup>-</sup> present in unknown substances/ ores using titrimetric and instrumental methods.</li> </ul>
I	II	R16	PH207BS	ENGINEERING PHYSICS LAB	<ul style="list-style-type: none"> <li>•Students can effectively use vernier calipers, various rules, meters, scales and other measuring devices to acquire measurements within the stated precision.</li> <li>•Student will use oscilloscopes and multimeters to construct a wide variety of electrical circuits and measure the properties of those circuits.</li> </ul>
I	II	R16	CS208ES	COMPUTER PROGRAMMING IN C LAB	<ol style="list-style-type: none"> <li>1. Ability to design and test programs to solve mathematical and scientific problems.</li> <li>2. Ability to write structured programs using control structures and functions.</li> </ol>
I	II	R16	EA209MC	NCC/NSO	After learning the contents of this paper the student must be able to: NCC has adopted community development activities with the aim of imbuing amongst cadets selfless service to the community, dignity of labour importance of self help, need to protect the environment and to assist weaker sections of the society in their upliftment.
II YEAR	I SEM	R 16	MA301BS	MATHEMATICS IV	After gaining knowledge of the contents of this paper the scholar must be able to: <ul style="list-style-type: none"> <li>• examine the complex functions close to their analyticity, integration the use of Cauchy's fundamental theorem</li> <li>• discover the Taylor's and Laurent's series growth of complicated functions</li> <li>• The bilinear transformation</li> <li>• Specific any periodic function in time period of sines and cosines</li> </ul>
II YEAR	I SEM	R 16	CS303ES	MATHEMATICAL FOUNDATIONS OF COMPUTER SCIENCE	Ability to apply mathematical logic to solve troubles. <ul style="list-style-type: none"> <li>• apprehend sets, family members, features, and discrete structures.</li> <li>• capable of use logical notation to define and cause about essential mathematical concepts along with sets, family members, and functions.</li> <li>• capable of formulate problems and resolve recurrence family members.</li> </ul>
II YEAR	I SEM	R 16	CS304ES	DIGITAL LOGIC DESIGN	<ul style="list-style-type: none"> <li>• able to apprehend number systems and codes.</li> <li>• able to solve boolean expressions using minimization strategies.</li> <li>• capable of design the sequential and combinational circuits.</li> <li>• able to apply nation reduction strategies to resolve sequential circuits</li> </ul>
II YEAR	I SEM	R 16	CS305ES	OBJECT ORIENTED PROGRAMMING THROUGH JAVA	<ul style="list-style-type: none"> <li>• able to understand using abstract instructions.</li> <li>• capable of solve issues using java series framework and i/o training.</li> <li>• able to broaden multithreaded programs with synchronization.</li> <li>• capable of develop applets for internet applications.</li> <li>• able to design gui based totally packages</li> </ul>
II YEAR	I SEM	R 16	CS302ES	DATA STRUCTURES THROUGH C++	<ul style="list-style-type: none"> <li>• Able to identify the appropriate data structures and algorithms for solving real world problems.</li> <li>•Able to implement various kinds of searching and sorting techniques.</li> </ul>
II YEAR	I SEM	R 16	CS307ES	IT WORKSHOP	<ul style="list-style-type: none"> <li>•Apply expertise for pc assembling and software set up.</li> <li>• potential a way to clear up the problem shooting troubles.</li> <li>• observe the equipment for practise of ppt, documentation and budget sheet and many</li> </ul>
II YEAR	I SEM	R 16	CS308ES	OBJECT ORIENTED PROGRAMMING THROUGH JAVA LAB	<ul style="list-style-type: none"> <li>•Capable of remedy actual global problems using oop techniques.</li> <li>• able to understand using abstract instructions.</li> <li>• capable of solve issues using java series framework and i/o training.</li> <li>• able to broaden multithreaded programs with synchronization.</li> </ul>
II YEAR	I SEM	R 16	CS306ES	DATA STRUCTURES THROUGH C++ LAB	<ul style="list-style-type: none"> <li>•Able to identify the appropriate data structures and algorithms for solving real world problems.</li> </ul>
II YEAR	I SEM	R 16	MC300ES	ENVIRONMENTAL SCIENCE AND TECHNOLOGY	<ul style="list-style-type: none"> <li>• Based on this course, the Engineering graduate will understand /evaluate / develop technologies on the basis of ecological principles and environmental regulations which in turn helps in sustainable development.</li> <li>• Able to understand and find the importance of ecological balance for sustainable development.</li> <li>• Gain the knowledge of developmental activities and mitigation measures</li> <li>• Get understanding the environmental policies and rules regulations</li> </ul>
II YEAR	II SEM	R 16	CS401BS	COMPUTER ORGANIZATION	<ul style="list-style-type: none"> <li>• Able to apprehend the simple components and the layout of cpu, alu and manage unit.</li> <li>• Capability to understand memory hierarchy and its effect on computer cost/performance.</li> <li>• Ability to understand the benefit of guidance degree parallelism and pipelining for high overall performance processor layout.</li> <li>• Capability to recognize the preparation set, training codecs and addressing modes of</li> </ul>
II	II SEM	R 16	CS402ES	DATABASE MANAGEMENT	<ul style="list-style-type: none"> <li>• Demonstrate the basic elements of a relational database management system.</li> <li>• Ability to identify the data models for relevant problems.</li> </ul>

YEAR	II SEM	R 16	CS402ES	MANAGEMENT SYSTEM	<ul style="list-style-type: none"> <li>• Ability to design entity relationship model and convert entity relationship diagrams into RDBMS and formulate SQL queries on the data.</li> </ul>
II YEAR	II SEM	R 16	CS403ES	OPERATING SYSTEMS	<ul style="list-style-type: none"> <li>• Apply optimization techniques for the improvement of system performance.</li> <li>• Ability to design and solve synchronization problems.</li> <li>• Learn about minimization of turnaround time, waiting time and response time and also maximization of throughput by keeping CPU as busy as possible.</li> </ul>
II YEAR	II SEM	R 16	CS404ES	FORMAL LANGUAGES AND AUTOMATA THEORY	<ul style="list-style-type: none"> <li>• Capable of understand the concept of summary machines and their electricity to apprehend the languages.</li> <li>• Capable of hire finite kingdom machines for modeling and solving computing issues.</li> <li>• Able to layout context unfastened grammars for formal languages.</li> <li>• Able to distinguish among decidability and undecidability.</li> </ul>
II YEAR	II SEM	R 16	SM405MS	BUSINESS ECONOMICS AND FINANCIAL	<ul style="list-style-type: none"> <li>• The students will understand the various Forms of Business and the impact of economic variables on the Business.</li> <li>• The Demand, Supply, Production, Cost, Market Structure, Pricing aspects are learnt.</li> </ul>
II YEAR	II SEM	R 16	CS406ES	COMPUTER ORGANIZATION LAB	<ul style="list-style-type: none"> <li>• Implement common sense gates using nand and nor gates</li> <li>• Design a complete adder using gates</li> <li>• Layout and enforce the four:1 mux, 8:1 mux the usage of gates /ics.</li> <li>• Design and put in force a three to 8 decoder the use of gates</li> <li>• Layout a four bit</li> </ul>
II YEAR	II SEM	R 16	CS407ES	DATABASE MANAGEMENT SYSTEM LAB	<ul style="list-style-type: none"> <li>• Ability to design and implement a database schema for given problem.</li> <li>• Apply the normalization techniques for development of application software to realistic problems.</li> </ul>
II YEAR	II SEM	R 16	CS408ES	OPERATING SYSTEMS LAB	<ul style="list-style-type: none"> <li>• Ability to develop application programs using system calls in Unix.</li> <li>• Ability to implement interprocess communication between two processes.</li> <li>• Ability to design and solve synchronization problems.</li> <li>• Ability to simulate and implement operating system concepts such as scheduling,</li> </ul>
II YEAR	II SEM	R 16	MC400HS	GENDER SENSITIZATION LAB	<ul style="list-style-type: none"> <li>• College students may have advanced a higher records of critical issues associated with gender in current-day india.</li> <li>• University college students may be sensitized to easy dimensions of the organic, dialogue of substances derived from studies, information, ordinary lifestyles, literature, and film. Sociological, mental and crook factors of gender.</li> <li>• college students will benefit a finer draw close of the manner gender discrimination works in our society and a way to counter it.</li> </ul>
III YEAR	I SEM	R 15	A50513	AUTOMATA AND COMPILER DESIGN	<p>Graduate should be capable of apprehend the concept of summary machines and their strength to apprehend the languages.</p> <ul style="list-style-type: none"> <li>• attains the information of language training &amp; grammars courting among them with the assist of Chomsky hierarchy.</li> <li>• ability to recognize the layout of a compiler given functions of the languages.</li> </ul>
III YEAR	I SEM	R 15	A50517	LINUX PROGRAMMING	<p>paintings optimistically in linux surroundings.</p> <ul style="list-style-type: none"> <li>• paintings with shell script to automate distinctive tasks as linux administration.</li> </ul>
III YEAR	I SEM	R 15	A50518	SOFTWARE ENGINEERING	<ul style="list-style-type: none"> <li>• capacity to perceive the minimal requirements for the development &amp; Utility.</li> <li>• ability to broaden, maintain, efficient reliable and fee powerful Software program solutions</li> </ul>
III YEAR	I SEM	R 15	A50510	OPERATING SYSTEMS	<p>Before the finish of the course understudy will have the capacity to ,</p> <ul style="list-style-type: none"> <li>• The understudy can depict the general engineering of PCs and describe, complexity and look at contrasting structures for operating Frameworks.</li> <li>• understand and investigate hypothesis and usage of: processes, asset control</li> </ul>
III YEAR	I SEM	R 15	A50515	COMPUTER NETWORKS	<p>Before the finish of the course understudy will have the capacity to</p> <ul style="list-style-type: none"> <li>• The understudy can depict the general engineering of PCs</li> </ul>
III YEAR	I SEM	R 15	A50010	MANAGERIAL ECONOMICS AND FINANCIAL ANALYSIS	<p>Toward the finish of the course, the understudy will.</p> <ul style="list-style-type: none"> <li>• Understanding the market elements specifically, request and supply, request guaging , versatility of interest and supply, estimating techniques and evaluating in various market structures.</li> <li>• Gain an understanding into how generation work is completed to accomplish minimum cost blend of data sources and cost examination .</li> </ul>
III YEAR	I SEM	R 15	A50589	OPERATING SYSTEMS LAB	<ul style="list-style-type: none"> <li>• The course targets make sure the development of college students applied competencies in operating structures associated areas.</li> </ul>
III YEAR	I SEM	R 15	A50588	COMPUTER NETWORKS LAB	<ul style="list-style-type: none"> <li>• ability to apprehend the encryption and decryption standards in linux surroundings.</li> <li>• capacity to apply appropriate set of rules for the locating of shortest direction.</li> <li>• capability to configure the routing table international</li> </ul>
III YEAR	II SEM	R 15	A60512	WEB TECHNOLOGIES	<p>gain know-how of patron facet scripting, validation of forms and AJAX programming have information of server facet scripting with Hypertext Preprocessor language have knowledge of what is xml and the way to parse and use xml records with java .</p> <ul style="list-style-type: none"> <li>• to introduce server side programming with java serviets and jsp.</li> </ul>
III YEAR	II SEM	R 15	A60018	HUMAN VALUES AND PROFESSIONAL ETHICS	<p>To help the students respect the critical complementarity between 'values' and 'skills' to make certain sustained happiness and prosperity that are the middle aspirations of all people.</p>



				ETHICS	•To facilitate the improvement of a holistic perspective amongst students closer to
III YEAR	II SEM	R 15	A60017	SOFTWARE TESTING METHODOLOGIES	<p>By the give up of the path, the scholar need to:</p> <ul style="list-style-type: none"> <li>•have an capability to use software program trying out knowledge and engineering strategies.</li> <li>•have an capability to design and behavior a software program take a look at procedure for a software trying out venture.</li> <li>•have an capacity to become aware of the desires of software program test automation, and outline and increase a check device to support test automation.</li> <li>•have an potential understand and perceive various software checking out problems, and solve those problems through designing and selecting software program check fashions, criteria, techniques, and methods.</li> <li>•have an potential to use diverse communicate methods and skills to talk with their teammates to behavior their exercise-orientated software checking out projects.</li> <li>•have primary know-how and information of contemporary troubles in software program checking out, inclusive of componentbased software testing troubles</li> <li>•have an ability to use software program testing techniques and modern software testing gear for his or her testing projects.</li> </ul>
III YEAR	II SEM	R 15	A60117	DISASTER MANAGEMENT	<p>At the end of the course, the student will be able to:</p> <ol style="list-style-type: none"> <li>1. Understand how learning and knowing about disasters</li> <li>2. A basic understanding of Prevention, Mitigation, Preparedness, Response and Recovery</li> <li>3. Describe different types of natural and man- made disasters. Work theoretically and practically in the processes of disaster management (disaster risk reduction, response, and recovery)</li> <li>4. Describe endogenous and exogenous hazards their harmful effects to the environment.</li> </ol>
III YEAR	II SEM	R 15	A60524	OBJECT ORIENTED ANALYSIS AND DESIGN	Graduate can able to take up the case studies and model it in different views with respect user requirement such as use case, logical, component and deployment and etc, and preparation of document of the project for the unified Library application.
III YEAR	II SEM	R 15	A60520	DATAWARE HOUSING AND DATA MINING	<ul style="list-style-type: none"> <li>•scholar should be capable of understand why the information warehouse similarly to database structures.</li> <li>• potential to perform the preprocessing of records and follow mining techniques on it. <ul style="list-style-type: none"> <li>• ability to discover the association guidelines, type and clusters in big facts units</li> </ul> </li> </ul>
III YEAR	II SEM	R 15	A60525	SOFTWARE TESTING METHODOLOGIES	<p>By the give up of the path, the scholar need to:</p> <ul style="list-style-type: none"> <li>•have an capability to use software program trying out knowledge and engineering strategies.</li> </ul>
III YEAR	II SEM	R 15	A60519	CLOUD COMPUTING	<p>Give an explanation for the evolving pc model caned cloud computing.</p> <ul style="list-style-type: none"> <li>•To introducability to recognize the virtualization and cloud computing concepts.</li> <li>•To the diverse levels of services that may be executed by means of cloud.</li> </ul>
III YEAR	II SEM	R 15	A60592	WEB TECHNOLOGIES LAB	<ul style="list-style-type: none"> <li>• ability to apprehend the numerous sorts of equipment.</li> <li>• reveal the class , cluster and and many others in large facts set</li> </ul>
III YEAR	II SEM	R 15	A60086	ADVANCED COMMUNICATION SKILLS LAB	<p>Accomplishment of sound vocabulary and its proper use contextually.</p> <ul style="list-style-type: none"> <li>•Flair in writing and felidty in written expression.</li> <li>•Stronger job potentialities.</li> <li>•Powerful talking skills</li> </ul>
IV YEAR	I SEM	R 13	A70522	INFORMATION SYSTEM	<ul style="list-style-type: none"> <li>• Student will be able to understand basic cryptographic algorithms, message and web authentication and security issues.</li> <li>• Ability to identify information system requirements for both of them such as client and</li> </ul>
IV YEAR	I SEM	R 13	A70530	DESIGN PATTERNS	capability to understand and observe not unusual layout patterns to incremental /iterative improvement.
IV YEAR	I SEM	R 13	A70535	MOBILE APPLICATION DEVELOPMENT	<ul style="list-style-type: none"> <li>•ability to evaluate and pick out suitable solutions to the cellular computing platform. <ul style="list-style-type: none"> <li>•potential to broaden the consumer interface.</li> <li>•capacity design a easy mobile cellphone recreation.</li> </ul> </li> </ul>
IV YEAR	I SEM	R 13	A70533	INFORMATION RETRIEVAL SYSTEM	<p>Become aware of primary theories in facts retrieval systems</p> <ul style="list-style-type: none"> <li>• identify the evaluation gear as they apply to statistics retrieval systems</li> <li>• is familiar with the problems solved in contemporary ir structures <ul style="list-style-type: none"> <li>• describes the blessings of present day ir systems</li> <li>• recognize the problem of representing and retrieving files</li> </ul> </li> </ul>

					<ul style="list-style-type: none"> <li>• recognize the problem of representing and retrieving files.</li> </ul>
IV YEAR	I SEM	R 13	A70541	SEMANTICWEB AND SOCIAL	<p>ability to apprehend and knowledge representation for the semantic web.</p> <ul style="list-style-type: none"> <li>• ability to create ontology.</li> </ul>
IV YEAR	I SEM	R 13	A70532	COMPUTER FORENSIC	<ul style="list-style-type: none"> <li>• Students may be information the use of computers in forensic, and how to use numerous forensic gear for an extensive kind of investigations.</li> <li>• It gives an possibility to students to preserve their zeal in research in computer forensics.</li> </ul>
IV YEAR	I SEM	R 13	A70538	CASE TOOLS& SOFTWARE TESTING LAB	<p>Capability to apprehend the history, fee of the use of and building case tools.</p> <ul style="list-style-type: none"> <li>• Capability to constructnd examine hybrid case gear by using integrating exisng tools.</li> <li>• Potential to deliver the product with qualitative.</li> </ul>
IV YEAR	I SEM	R 13	A70539	MOBILE APPLICATION DEVELOPMENT LAB	<p>capacity to put in j2me toolkit.</p> <ul style="list-style-type: none"> <li>• Ability to increase the person interface and authenticate with an internet server.</li> <li>• potential to design web utility the usage of jame.</li> </ul>
IV YEAR	II SEM	R 13	A80014	MANAGEMENT SCIENCE	<p>Through the end of the course, the scholar may be in a function to plan an organizational shape for a given context in the agency perform production operations through paintings look at.</p> <ul style="list-style-type: none"> <li>• Recognize the markets, customers and opposition better and rate the given merchandise accurately.</li> <li>• Make certain pleasant for a given product or service</li> <li>• Plan and manipulate the 1-ir feature higher plan, time table and control tasks thru pert</li> </ul>
IV YEAR	II SEM	R 13	A80511	WEB SERVICES	<p>essential data of wsdl, uddi, cleansing soap</p> <ul style="list-style-type: none"> <li>• put in force WEB SERVICESclient and server with interoperable structures</li> </ul>
IV YEAR	II SEM	R 13	A80544	STORAGE AREA NETWORK	<p>. Potential to offer the mechanisms for the backup/healing</p>