

Course Outcomes

S.NO	Program Name	Semester	Subject Code & Name	Course Outcomes
1			HS8151 COMMUNICATIVE ENGLISH.	1. Read articles of a general kind in magazines and newspapers. 2. Participate effectively in informal conversations; introduce themselves and their friends and express opinions in English. 3. Comprehend conversations and short talks delivered in English. 4. Write short essays of a general kind and personal letters and emails in English.
2			MA8151 ENGINEERING MATHEMATICS-I	1. Use both the limit definition and rules of differentiation to differentiate functions. 2. Evaluate integrals both by using Riemann sums and by using the Fundamental Theorem of Calculus. 3. Apply integration to compute multiple integrals, area, volume, integrals in polar coordinates, in addition to change of order and change of variables. 4. Evaluate integrals using techniques of integration, such as substitution, partial fractions and integration by parts. 5. Determine convergence/divergence of improper integrals and evaluate convergent improper integrals. 6. Apply various techniques in solving differential equations.
3				1. The students will gain knowledge on the basics of properties of matter and its applications, 2. The students will acquire knowledge on the concepts of waves and optical devices and their applications in fibre optics,

	B.E. (Common to all Programs)	First	PH8151 ENGINEERING PHYSICS	3. The students will have adequate knowledge on the concepts of thermal properties of materials and their applications in expansion joints and heat exchangers,	
				4. The students will get knowledge on advanced physics concepts of quantum theory and its applications in tunneling microscopes.	
				5. The students will understand the basics of crystals, their structures and different crystal growth techniques.	
4				CY8151 ENGINEERING CHEMISTRY	1. The knowledge gained on engineering materials, fuels, energy sources and water treatment techniques will facilitate better understanding of engineering processes and applications for further learning.
5				GE8151 PROBLEM SOLVING AND PYTHON PROGRAMMING	1. Develop algorithmic solutions to simple computational problems
			2. Read, write, execute by hand simple Python programs.		
			3. Structure simple Python programs for solving problems.		
			4. Decompose a Python program into functions.		
			5. Represent compound data using Python lists, tuples, dictionaries.		
			6. Read and write data from/to files in Python Programs		
			1. On successful completion of this course, the student will be able to familiarize with the fundamentals and standards of Engineering graphics, perform freehand sketching of basic geometrical constructions and multiple views of objects.		

			<p>2. To project orthographic projections of lines and plane surfaces. draw projections and solids and development of surfaces.</p> <p>3. Visualize and to project isometric and perspective sections of simple solids.</p>
7		GE8161 PROBLEM SOLVING AND PYTHON PROGRAMMING LABORATORY	<p>1. Write, test, and debug simple Python programs, implement Python programs with conditionals and loops Develop Python programs step-wise by defining functions and calling them.</p> <p>2. Use Python lists,tuples, dictionaries for representing compound data,Read and write data from/to files in Python.</p>
8		BS8161 PHYSICS AND CHEMISTRY LABORATORY	<p>1. The students will be able to apply principles of elasticity, optics and thermal properties for engineering applications.</p>
9		HS8251 TECHNICAL ENGLISH	<p>1. Read technical texts and write area-specific texts effortlessly.</p> <p>2.Listen and comprehend lectures and talks in their area of specialization successfully.</p> <p>3.Speak appropriately and effectively in varied formal and informal contexts.</p> <p>4.Write reports and winning job applications.</p>
10			<p>1. Eigenvalues and eigenvectors, diagonalization of a matrix, Symmetric matrices, Positive definite matrices and similar matrices.</p> <p>2. Gradient, divergence and curl of a vector point function and related identities.</p>

			MA8251 ENGINEERING MATHEMATICS-II	<p>3. Evaluation of line, surface and volume integrals using Gauss, Stokes and Green's theorems and their verification.</p> <p>4. Analytic functions, conformal mapping and complex integration.</p> <p>5. Laplace transform and inverse transform of simple functions, properties, various related theorems and application to differential equations with constant coefficients.</p>
11			PH8201 PHYSICS FOR CIVIL ENGINEERING	<p>1. The students will have knowledge on the thermal performance of buildings,</p> <p>2. The students will acquire knowledge on the acoustic properties of buildings,</p> <p>3. The students will get knowledge on various lighting designs for buildings,</p> <p>4. The students will gain knowledge on the properties and performance of engineering materials, and</p> <p>5. The students will understand the hazards of buildings.</p>
12	B.E Civil	Second	BE8251 BASIC ELECTRICAL AND ELECTRONICS ENGINEERING	<p>1. Ability to identify the electrical components and explain the characteristics of electrical machines.</p> <p>2. Ability to identify electronics components and understand the characteristics.</p>
13			GE8291 ENVIRONMENTAL SCIENCE AND ENGINEERING	<p>1.Environmental Pollution or problems cannot be solved by mere laws. Public participation is an important aspect which serves the environmental Protection. One will obtain knowledge on the following after completing the course.</p> <p>2. Public awareness of environmental is at infant stage.</p> <p>3.Ignorance and incomplete knowledge has lead to misconceptions</p>

				4. Development and improvement in std. of living has lead to serious environmental disasters.
14			GE8292 ENGINEERING MECHANICS	1. Illustrate the vectorial and scalar representation of forces and moments 2. Analyse the rigid body in equilibrium 3. Evaluate the properties of surfaces and solids 4. Calculate dynamic forces exerted in rigid body 5. Determine the friction and the effects by the laws of friction.
15			GE8261 ENGINEERING PRACTICES LABORATORY	1. Fabricate carpentry components and pipe connections including plumbing works. 2. Use welding equipments to join the structures. 3. Carry out the basic machining operations 4. Make the models using sheet metal works 5. Illustrate on centrifugal pump, Air conditioner, operations of smithy, foundary and fittings 6. Carry out basic home electrical works and appliances 7. Measure the electrical quantities 8. Elaborate on the components, gates, soldering practices.
16			CE8211 COMPUTER AIDED BUILDING	1. The students will be able to draft the plan, elevation and sectional views of the buildings, industrial structures, and
17	B.E Mech	Second	BE8261 BASIC ELECTRICAL, ELECTRONICS AND INSTRUMENTATION ENGINEERING	1. Ability to determine the speed characteristic of different electrical machines 2. Ability to design simple circuits involving diodes and transistors 3. Ability to use operational amplifiers.
18			EE8261 ELECTRIC CIRCUITS LABORATORY	1. Understand and apply circuit theorems and concepts in engineering applications. 2. Simulate electric circuits.
19			EE8251 CIRCUIT THEORY	1. Ability to analyse electrical circuits 2. Ability to apply circuit theorems

			THEORY	
20	B.E. EEE	Second	GE8291 ENVIRONMENTAL SCIENCE AND ENGINEERING	<p>3. Ability to analyse transients</p> <p>1.Environmental Pollution or problems cannot be solved by mere laws. Public participation is an important aspect which serves the environmental Protection. One will obtain knowledge on the following after completing the course.</p> <p>2. Public awareness of environmental is at infant stage.</p> <p>3. Ignorance and incomplete knowledge has lead to misconceptions</p> <p>4. Development and improvement in std. of living has lead to serious environmental disasters.</p>
21	B.E ECE	Second	EC8261 CIRCUITS AND DEVICES LABORATORY	<p>1. Analyze the characteristics of basic electronic devices</p> <p>2. Design RL and RC circuits</p> <p>3. Verify Thevinin & Norton theorem KVL & KCL, and Super Position Theorems.</p>
22			EC8252 ELECTRONIC DEVICES	<p>1. Explain the V-I characteristic of diode, UJT and SCR</p> <p>2. Describe the equivalence circuits of transistors</p> <p>3. Operate the basic electronic devices such as PN junction diode, Bipolar and Field effect Transistors, Power control devices, LED, LCD and other Opto-electronic devices.</p>
23			PH8253 PHYSICS FOR ELECTRONICS ENGINEERING	<p>1. Gain knowledge on classical and quantum electron theories, and energy band structures.</p> <p>2. Acquire knowledge on basics of semiconductor physics and its applications in various devices,</p> <p>3. Get knowledge on magnetic and dielectric properties of materials,</p> <p>4. Have the necessary understanding on the functioning of optical materials for optoelectronics,</p>

				5. Understand the basics of quantum structures and their applications in spintronics and carbon electronics.
24	B.E Biomedical	Second	BM8251 ENGINEERING MECHANICS FOR BIOMEDICAL ENGINEERS	1. Use scalar and vector analytical techniques for analyzing forces in statically determinate structures 2. Apply fundamental concepts of kinematics and kinetics of particles to the analysis of simple, practical problems.
25			BM8201 FUNDAMENTALS OF	1. Explain the fundamentals of biochemistry 2. Clinical application of Biochemistry.
26			BM8211 BIO CHEMISTRY LABORATORY	1. Understand the Biochemistry laboratory functional components 2. Understand the basics principle of preparation of buffers. 3. Have a sound knowledge of qualitative test of different biomolecules. 4. Understand the basics knowledge of Biochemical parameter and their interpretation in Blood sample. 5. Have a sound knowledge of separation technology of proteins and amino acids.
27	B.E Mechatronics	Second	GE8291 ENVIRONMENTAL SCIENCE AND ENGINEERING	1. Environmental Pollution or problems cannot be solved by mere laws. Public participation is an important aspect which serves the environmental Protection. One will obtain knowledge on the following after completing the course. 2. Public awareness of environmental is at infant stage. 3. Ignorance and incomplete knowledge has lead to misconceptions.
28			CS8251	1. Develop simple applications in C using basic constructs 2. Design and implement applications using arrays and strings

	B.E CSE	Second	CS8251 PROGRAMMING IN C	<ol style="list-style-type: none"> 3. Develop and implement applications in C using functions and pointers. 4. Develop applications in C using structures. 5. Design applications using sequential and random access file processing.
29			CS8261 C PROGRAMMING LABORATORY	<ol style="list-style-type: none"> 1. Develop C programs for simple applications making use of basic constructs, arrays and strings. 2. Develop C programs involving functions, recursion, pointers, and structures. 3. Design applications using sequential and random access file processing.
30	B.Tech. IT	Second	BE8255 BASIC ELECTRICAL, ELECTRONICS AND MEASUREMENT ENGINEERING	<ol style="list-style-type: none"> 1. Discuss the essentials of electric circuits and analysis. 2. Discuss the basic operation of electric machines and transformers 3. Introduction of renewable sources and common domestic loads. 4. To understand the fundamentals of electronic circuit constructions. 5. Introduction to measurement and metering for electric circuits.
31			IT8201 INFORMATION TECHNOLOGY ESSENTIALS	<ol style="list-style-type: none"> 1. Design and deploy web-sites 2. Design and deploy simple web-applications 3. Create simple database applications 4. Develop information system 5. Describe the basics of networking and mobile communications.
32			IT8211 INFORMATION TECHNOLOGY ESSENTIALS	<ol style="list-style-type: none"> 1. Design interactive websites using basic HTML tags, different styles, links and with all Basic control elements. 2. Create client side and server side programs using scripts using PHP. 3. Design dynamic web sites and handle multimedia components

			ESSENTIALS LABORATORY	4. Create applications with PHP connected to database.
				5. Create Personal Information System
				6. Implement the technologies behind computer networks and mobile communication.
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S. No	Program Name	Semester	Subject Code & Name	Course Outcomes
1			MA6351 TRANSFORMS AND PARTIAL DIFFERENTIAL EQUATIONS	1. The understanding of the mathematical principles on transforms and partial differential equations would provide them the ability to formulate and solve some of the physical problems of engineering.
2			CE6306 STRENGTH OF MATERIALS	1. Upon completion of this course, the students can able to apply mathematical knowledge to calculate the deformation behaviour of simple structures.
3				2. Critically analyse problem and solve the problems related to mechanical elements and analyse the deformation behaviour for different types of loads.
4			ME6301 ENGINEERING THERMODYNAMICS	1. Upon completion of this course, the students can able to apply the Thermodynamic Principles to Mechanical Engineering Application.
5				2. Apply mathematical fundamentals to study the properties of steam, gas and gas mixtures.
6		Third	CE6451 FLUID MECHANICS AND MACHINERY	1. Upon completion of this course, the students can able to apply mathematical knowledge to predict the properties and characteristics of a fluid.
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8	ME6302 MANUFACTURING TECHNOLOGY – I	1. Upon completion of this course, the students can able to apply the different manufacturing process and use this in industry for component production
9	EE6351 ELECTRICAL DRIVES AND CONTROL	1. Upon Completion of this subject, the students can able to explain different types of electrical machines and their performance
10	ME6311 MANUFACTURING TECHNOLOGY LABORATORY – I	1. Upon completion of this course, the students can able to demonstrate and fabricate different types of components using the machine tools
11	CE6461 FLUID MECHANICS AND MACHINERY LABORATORY	1. Ability to use the measurement equipments for flow measurement
		2. Ability to do performance trust on different fluid machinery
12	EE6365 ELECTRICAL ENGINEERING LABORATORY	1. Ability to perform speed characteristic of different electrical machine
13	MA6452 STATISTICS AND NUMERICAL METHODS	1. It helps the students to have a clear perception of the power of statistical and numerical techniques, ideas and would be able to demonstrate the applications of these techniques to problems drawn from industry, management and other engineering fields.
14	ME6401 KINEMATICS OF MACHINERY	1. Upon completion of this course, the students can able to apply fundamentals of mechanism for the design of new mechanisms and analyse them for optimum design.
15	ME6402 MANUFACTURING TECHNOLOGY – II	1. Upon completion of this course, the students can able to understand and compare the functions and applications of different metal cutting tools and also demonstrate the programming in CNC machining.

16	Fourth	ME6403 ENGINEERING MATERIALS AND METALLURGY	1. Upon completion of this course, the students can able to apply the different materials, their processing, heat treatments in suitable application in mechanical engineering fields.
17		GE6351 ENVIRONMENTAL SCIENCE AND ENGINEERING	1. Public awareness of environmental is at infant stage.
			2. Ignorance and incomplete knowledge has lead to misconceptions
			3. Development and improvement in std. of living has lead to serious environmental disasters
18		ME6404 THERMAL ENGINEERING	1. Upon completion of this course, the students can able to apply the different gas power cycles and use of them in IC and R&AC applications.
19		ME6411 MANUFACTURING TECHNOLOGY LABORATORY – II	1. Ability to use different machine tools to manufacturing gears.
			2. Ability to use different machine tools for finishing operations
			3. Ability to manufacture tools using cutter grinder
			4. Develop CNC part programming
20		ME6412 THERMAL ENGINEERING LABORATORY – I	1. Ability to conduct experiment on IC engine to study the characteristic and performance of IC design/ steam turbines.
21	CE6315 STRENGTH OF MATERIALS	1. Ability to perform different destructive testing	
			2. Ability to characteristic materials
22	ME6501 COMPUTER AIDED DESIGN	1. Upon completion of this course, the students can able to use computer and CAD software's for modelling of mechanical components	
23		ME6502 HEAT AND MASS TRANSFER	1. Upon completion of this course, the students can able to understand and apply different heat and mass transfer principles of different applications.
24		ME6503 DESIGN OF MACHINE ELEMENTS	1. Upon completion of this course, the students can able to successfully design machine components

25	B.E. MECHANICAL ENGINEERING	Fifth	ME6504 METROLOGY AND MEASUREMENTS	1. Upon completion of this course, the Students can demonstrate different measurement technologies and use of them in Industrial Components
26			ME6505 DYNAMICS OF MACHINES	1. Upon completion of this course, the Students can able to predict the force analysis in mechanical system and related vibration issues and can able to solve the problem
27			GE6075 PROFESSIONAL ETHICS IN ENGINEERING	1. Upon completion of the course, the student should be able to apply ethics in society, discuss the ethical issues related to engineering and realize the responsibilities and rights in the society
28			ME6511 DYNAMICS LABORATORY	1. Ability to demonstrate the principles of kinematics and dynamics of machinery
				2. Ability to use the measuring devices for dynamic testing.
29			ME6512 THERMAL ENGINEERING LABORATORY – II	1. Ability to demonstrate the fundamentals of heat and predict the coefficient used in that transfer application and also design refrigeration cycle.
30			ME6513 METROLOGY AND MEASUREMENTS LABORATORY	1. Ability to handle different measurement tools and perform measurements in quality impulsion
31			ME6601 DESIGN OF TRANSMISSION SYSTEMS	1. Upon completion of this course, the students can able to successfully design transmission components used in Engine and machines
32			MG6851 PRINCIPLES OF MANAGEMENT	1. Upon completion of the course, students will be able to have clear understanding of managerial functions like planning, organizing, staffing, leading & controlling and have same basic knowledge on international aspect of management

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ME6602 AUTOMOBILE ENGINEERING	1. Upon completion of this course, the students will be able to identify the different components in automobile engineering.
	2. Have clear understanding on different auxiliary and transmission systems usual.
ME6603 FINITE ELEMENT ANALYSIS	1. Upon completion of this course, the students can able to understand different mathematical Techniques used in FEM analysis and use of them in Structural and thermal problem
ME6604 GAS DYNAMICS AND JET PROPULSION	1. Upon completion of this course, the students can able to successfully apply gas dynamics principles in the Jet and Space Propulsion
ME6004 UNCONVENTIONAL MACHINING PROCESSES	1. Upon completion of this course, the students can able to demonstrate different unconventional machining processes and know the influence of difference process parameters on the performance and their applications.
ME6611 CAD / CAM LABORATORY	1. Ability to develop 2D and 3D models using modelling softwares.
	2. Ability to understand the CNC control in modern manufacturing system.
	3. Ability to prepare CNC part programming and perform manufacturing.
ME6612 DESIGN AND FABRICATION PROJECT	1. Use of design principles and develop conceptual and engineering design of any components.
	2. Ability to fabricate any components using different manufacturing tools.
GE6674 COMMUNICATION AND SOFT SKILLS- LABORATORY BASED	1. Take international examination such as IELTS and TOEFL
	2. Make presentations and Participate in Group Discussions.

			3. Successfully answer questions in interviews.
40		ME6701 POWER PLANT ENGINEERING	1. Upon completion of this course, the students can able to understand different types of power plant, and its functions and their flow lines and issues related to them. 2. Analyse and solve energy and economic related issues in power sectors.
41		ME6702 MECHATRONICS	1. Upon completion of this course, the students can able to design mechatronics system with the help of Microprocessor, PLC and other electrical and Electronics Circuits.
42		ME6703 COMPUTER INTEGRATED MANUFACTURING SYSTEMS	1. Upon completion of this course, the student can able to understand the use of computers in process planning and use of FMS and Robotics in CIM
43		GE6757 TOTAL QUALITY MANAGEMENT	1. The student would be able to apply the tools and techniques of quality management to manufacturing and services processes.
44	Seventh	ME6008 WELDING TECHNOLOGY	1. Upon completion of this course, the students can able to compare different types of Welding process for effective Welding of Structural components.
45		ME6021 HYDRAULICS AND PNEUMATICS	1. Identify hydraulic and pneumatic components. 2. Ability to design hydraulic and pneumatic circuits.
46		ME6711 SIMULATION AND ANALYSIS LABORATORY	1. Upon completion of this course, the Students can model, analyse and simulate experiments to meet real world system and evaluate the performance.
47		ME6712 MECHATRONICS LABORATORY	1. Upon completion of this course, the students can able to design mechatronics system with the help of Microprocessor, PLC and other electrical and Electronics Circuits.

48		ME6713 COMPREHENSION	1. Ability to understand and comprehend any given problem related to mechanical engineering field.
49		MG6863 ENGINEERING ECONOMICS	1. Upon successful completion of this course, students will acquire the skills to apply the basics of economics and cost analysis to engineering and take economically sound decisions.
50	Eighth	IE6605 PRODUCTION PLANNING AND CONTROL	1. 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.
			2. They can plan manufacturing requirements manufacturing requirement Planning (MRP II) and Enterprise Resource Planning (ERP).
51		ME6019 NON DESTRUCTIVE TESTING AND MATERIALS	1. Upon completion of this course, the students can able to use the various Non Destructive Testing and Testing methods understand for defects and characterization of industrial components
52		ME6811 PROJECT WORK	1. On Completion of the project work students will be in a position to take up any challenging practical problems and find solution by formulating proper methodology.
53		MA6351TRANSFORMS AND PARTIAL DIFFERENTIAL EQUATIONS	1. The understanding of the mathematical principles on transforms and partial differential equations would provide them the ability to formulate and solve some of the physical problems of engineering.
54		GE6351ENVIRONMEN TAL SCIENCE AND ENGINEERING	1. Public awareness of environmental is at infant stage.
			2. Ignorance and incomplete knowledge has lead to misconceptions

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Third	ENGINEERING	3. Development and improvement in std. of living has lead to serious environmental disasters.
	CE6301 ENGINEERING GEOLOGY	1. Will be able to understand the importance of geological knowledge such as earth, earthquake, volcanism and the action of various geological agencies. Will realize the importance of this knowledge in projects such as dams, tunnels, bridges, roads, airport and harbor
		2. Can choose the types of foundations and other related aspects.
	CE6302 MECHANICS OF SOLIDS	1. Thorough understanding of the fundamental concepts of stress and strain in mechanics of solids and structures.
		2. The ability to analyze determinate beams and trusses to determine shear forces, bending moments and axial forces.
		3. A sufficient knowledge in designing shafts to transmit required power and also springs for its maximum energy storage capacities.
	CE6303 MECHANICS OF FLUIDS	1. The students will be able to get a basic knowledge of fluids in static, kinematic and dynamic equilibrium.
		2. They will also gain the knowledge of the applicability of physical laws in addressing problems in hydraulics.

58		CE6304 SURVEYING I	<ol style="list-style-type: none"> 1. Students are expected to use all surveying equipments, prepare LS & CS, 2. Contour maps and carryout surveying works related to land and civil engineering projects.
59		CE6311 SURVEY PRACTICAL I	<ol style="list-style-type: none"> 1. Students completing this course would have acquired practical knowledge on handling basic survey instruments including leveling and development of contour map of given area.
60		CE6312 COMPUTER AIDED BUILDING DRAWING	<ol style="list-style-type: none"> 1. The students will be able to draft the plan, elevation and sectional views of the buildings, industrial structures, framed buildings using computer softwares.
61		MA 6459 NUMERICAL METHODS	<ol style="list-style-type: none"> 1. The students will have a clear perception of the power of numerical techniques, ideas and would be able to demonstrate the applications of these techniques to problems drawn from industry, management and other engineering fields.
62		CE 6401 CONSTRUCTION MATERIALS	<ol style="list-style-type: none"> 1. Compare the properties of most common and advanced building materials. 2. Understand the typical and potential applications of these materials Understand the relationship between material properties and structural form 3. Understand the importance of experimental verification of material properties.

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Fourth	CE 6402 STRENGTH OF MATERIALS	<ol style="list-style-type: none"> 1. Students will have through knowledge in analysis of indeterminate beams and use of energy method for estimating the slope and deflections of beams and trusses. 2. They will be in a position to assess the behaviour of columns, beams and failure of materials. 	
	CE 6403 APPLIED HYDRAULIC ENGINEERING	<ol style="list-style-type: none"> 1. The students will be able to apply their knowledge of fluid mechanics in addressing problems in open channels. 2. They will possess these skills to solve problems in uniform, gradually and rapidly varied flows in steady state conditions. 3. They will have knowledge in hydraulic machineries (pumps and turbines). 	
		CE 6404 SURVEYING II	<ol style="list-style-type: none"> 1. Understand the advantages of electronic surveying over conventional surveying methods 2. Understand the working principle of GPS, its components, signal structure, and error sources 3. Understand various GPS surveying methods and processing techniques used in GPS observations.
			CE 6405 SOIL MECHANICS

67	CE 6411 STRENGTH OF MATERIALS LABORATORY	1. The students will have the required knowledge in the area of testing of materials and components of structural elements experimentally.
68	CE 6412 HYDRAULIC ENGINEERING LABORATORY	1. The students will be able to measure flow in pipes and determine frictional losses. 2. The students will be able to develop characteristics of pumps and turbines.
69	CE 6413 SURVEY PRACTICAL II	1. Students completing this course would have acquired practical knowledge on handling survey instruments like Theodolite, Tacheometry and total station and have adequate knowledge to carryout, Triangulation and Astronomical surveying including general field marking for various engineering projects and curves setting.
70	CE6501 STRUCTURAL ANALYSIS I	1. Students will be able to analysis trusses, frames and arches 2. Analyse structures for moving loads and Will be conversant with classical methods of analysis.
	CE6502 FOUNDATION ENGINEERING	1. Students will have the ability to select type of foundation required for the soil at a place and able to design shallow, foundation, deep foundation and retaining structures.
	CE 6503	1. The students completing the course will have an insight into the structure of drinking water supply systems, including water transport, treatment and distribution.

71	B.E. CIVIL	Fifth	CE 6503 ENVIRONMENTAL ENGINEERING I	<ol style="list-style-type: none"> An understanding of water quality criteria and standards, and their relation to public health, The ability to design and evaluate water supply project alternatives on basis of chosen selection criteria.
72			CE 6504 HIGHWAY ENGINEERING	<ol style="list-style-type: none"> The students completing this course would have acquired knowledge on planning, design, construction and maintenance of highways as per IRC standards and other methods.
73			CE 6505 DESIGN OF REINFORCED CONCRETE ELEMENTS	<ol style="list-style-type: none"> The student shall be in a position to design the basic elements of reinforced concrete structures.
74			CE 6506 CONSTRUCTION TECHNIQUES, EQUIPMENT AND PRACTICE	<ol style="list-style-type: none"> Students completing the course will have understanding of different construction techniques, practices and equipments. They will be able to plan the requirements for substructure and superstructure a construction.
75			GE6674 COMMUNICATION AND SOFT SKILLS- LABORATORY BASED	<ol style="list-style-type: none"> Take international examination such as IELTS and TOEFL
				<ol style="list-style-type: none"> Make presentations and Participate in Group Discussions.
				<ol style="list-style-type: none"> Successfully answer questions in interviews.
76	CE6511 SOIL MECHANICS LABORATORY	<ol style="list-style-type: none"> Students know the techniques to determine index properties and engineering properties such as shear strength, compressibility and permeability by conducting appropriate tests. 		

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	CE6512 SURVEY CAMP*	1. The student shall have a comprehensive design knowledge related to various structural systems.
	CE6601 DESIGN OF REINFORCED CONCRETE & BRICK MASONRY	1. The student shall have a comprehensive design knowledge related to various structural systems.
	CE6602 STRUCTURAL ANALYSIS II	1. The student will have the knowledge on advanced methods of analysis of structures including space and cable structures.
	CE6603 DESIGN OF STEEL STRUCTURES	1. The students would have knowledge on the design of structural steel members subjected To compressive, tensile and bending forces, as per current code and also know to design structural systems such as roof trusses and gantry girders.
Sixth	CE6604 RAILWAYS, AIRPORTS AND HARBOUR ENGINEERING	1. On completing the course, the students will have the ability to Plan and Design various civil engineering aspects of Railways, Airports and Harbour.
	CE6605 ENVIRONMENTAL ENGINEERING II	1. The students completing the course will have ability to estimate sewage generation and design sewer system including sewage pumping stations.
		2. Required understanding on the characteristics and composition of sewage, self purification of streams
		3. •bility to perform basic design of the unit operations and processes that are used in sewage treatment.

83	CE6611 ENVIRONMENTAL ENGINEERING LABORATORY	1. The students completing the course will be able to characterize wastewater and conduct treatability studies.
84	CE6612 CONCRETE AND HIGHWAY ENGINEERING LABORATORY	1. Student knows the techniques to characterize various pavement materials through relevant tests.
85	CE6701 STRUCTURAL DYNAMICS AND EARTHQUAKE ENGINEERING	1. At the end of the course, student will have the knowledge to analyse structures subjected to dynamic loading and to design the structures for seismic loading as per code provisions.
86	CE6702 PRESTRESSED CONCRETE STRUCTURES	1. Student shall have a knowledge on methods of prestressing and able to design various prestressed concrete structural elements.
87	CE6703 WATER RESOURCES AND IRRIGATION ENGINEERING	1. The students will have knowledge and skills on Planning, design, operation and management of reservoir system.
		2. The student will gain knowledge on different methods of irrigation including canal irrigation.
88	CE6704 ESTIMATION AND QUANTITY SURVEYING	1. The student shall be able to estimate the material quantities, prepare a bill of quantities, make specifications and prepare tender documents. Student shall be able to prepare value estimates.

89	Seventh	CE6007 HOUSING PLANNING AND MANAGEMENT	1. The students should have a comprehensive knowledge of planning, design, evaluation, construction and financing of housing projects.
90		EN6501 MUNICIPAL SOLID WASTE MANAGEMENT	1. The students completing the course will have an understanding of the nature and characteristics of municipal solid wastes and the regulatory requirements regarding municipal solid waste management
			2. Ability to plan waste minimisation and design storage, collection, transport, processing and disposal of municipal solid waste
91		CE6711 COMPUTER AIDED DESIGN AND DRAFTING LABORATORY	1. At the end of the course the student acquires hands on experience in design and preparation of structural drawings for concrete / steel structures normally encountered in Civil Engineering practice.
92		CE6712 DESIGN PROJECT	1. On completion of the design project students will have a better experience in designing various design problems related to Civil Engineering.
93		MG6851 PRINCIPLES OF MANAGEMENT	1. Upon completion of the course, students will be able to have clear understanding of managerial functions like planning, organizing, staffing, leading & controlling and have same basic knowledge on international aspect of management.

94	Eighth	CE6016 PREFABRICATED STRUCTURES	1. The student shall be able to design some of the prefabricated elements and also have the knowledge of the construction methods in using these elements.
95		CE6021 REPAIR AND REHABILITATION OF STRUCTURES	1. Students must gained knowledge on quality of concrete, durability aspects, causes of deterioration, assessment of distressed structures, repairing of structures and demolition procedures.
96		CE6811 PROJECT WORK	1. On Completion of the project work students will be in a position to take up any challenging practical problems and find solution by formulating proper methodology.
97		MA6351 TRANSFORMS AND PARTIAL DIFFERENTIAL EQUATIONS	The understanding of the mathematical principles on transforms and partial differential equations would provide them the ability to formulate and solve some of the physical problems of engineering.
98		CS6301 PROGRAMMING AND DATA STRUCTURES II	1.Design problem solutions using Object Oriented Techniques.
			2. Apply the concepts of data abstraction, encapsulation and inheritance for problem solutions.
	3.Use the control structures of C++ appropriately.		
	4.Critically analyse the various algorithms.		
	5.Apply the different data structures to problem solutions.		
	CS6302 DATABASE MANAGEMENT	1.Design Databases for applications. 2.Use the Relational model, ER diagrams. 3.Apply concurrency control and recovery mechanisms for practical problems.	

99	Third	SYSTEMS	4.Design the Query Processor and Transaction Processor.
			5.Apply security concepts to databases.
100		CS6303 COMPUTER ARCHITECTURE	1.Design arithmetic and logic unit.
			2.Design and analyse pipelined control units.
			3.Evaluate performance of memory systems.
			4.Understand parallel processing architectures.
101		CS6304 ANALOG AND DIGITAL COMMUNICATION	1.Apply analog and digital communication techniques.
			2.Use data and pulse communication techniques.
			3.Analyze Source and Error control coding.
			4.Utilize multi-user radio communication.
102		GE6351 ENVIRONMENTAL SCIENCE AND ENGINEERING	1.Public awareness of environment at infant stage.
			2.Ignorance and incomplete knowledge has lead to misconceptions.
			3.Development and improvement in standard of living has lead to serious environmental disasters.
103		CS6311 PROGRAMMING AND DATA STRUCTURE LABORATORY II	1.Design and implement C++ programs for manipulating stacks, queues, linked lists, trees, and graphs.
		2.Apply good programming design methods for program development.	
		3. Apply the different data structures for implementing solutions to practical problems.	
		4.Develop recursive programs using trees and graphs.	
104	CS6312 DATABASE MANAGEMENT SYSTEMS LABORATORY	1.Design and implement a database schema for a given problem-domain.	
		2.Populate and query a database	
		3.Create and maintain tables using PL/SQL.	
		4.Prepare reports.	
		MA6453 PROBABILITY AND	1.The students will have a fundamental knowledge of the probability concepts.
			2.Acquire skills in analyzing queueing models.

105		PROBABILITY AND QUEUEING THEORY	3.It also helps to understand and characterize phenomenon which evolve with respect to time in a probabilistic manner.
106		CS6551 COMPUTER NETWORKS	1. Identify the components required to build different types of networks. 2. Choose the required functionality at each layer for given application. 3. Identify solution for each functionality at each layer. 4. Trace the flow of information from one node to another node in the network.
107		CS6401 OPERATING SYSTEMS	1. Design various Scheduling algorithms. 2. Apply the principles of concurrency. 3. Design deadlock, prevention and avoidance algorithms. 4. Compare and contrast various memory management schemes. 5. Design and Implement a prototype file systems. 6. Perform administrative tasks on Linux Servers.
108		CS6402 DESIGN AND ANALYSIS OF ALGORITHMS	1. Design algorithms for various computing problems. 2. Analyze the time and space complexity of algorithms. 3. Critically analyze the different algorithm design techniques for a given problem. 4. Modify existing algorithms to improve efficiency.
109	Fourth	EC6504 MICROPROCESSOR AND MICROCONTROLLER	1. Design and implement programs on 8086 microprocessor. 2. Design I/O circuits. 3. Design Memory Interfacing circuits. 4. Design and implement 8051 microcontroller based systems.
			1. Identify the key activities in managing a software project. 2. Compare different process models.

110	CS6403 SOFTWARE ENGINEERING	<ul style="list-style-type: none"> 3. Concepts of requirements engineering and Analysis Modeling. 4. Apply systematic procedure for software design and deployment. 5. Compare and contrast the various testing and maintenance.
111	CS6411 NETWORKS LABORATORY	<ul style="list-style-type: none"> 1. Use simulation tools. 2. Implement the various protocols. 3. Analyse the performance of the protocols in different layers. 4. Analyze various routing algorithms.
112	CS6412 MICROPROCESSOR AND MICROCONTROLLER LABORATORY	<ul style="list-style-type: none"> 1. Write ALP Programmes for fixed and Floating Point and Arithmetic. 2. Interface different I/Os with processor. 3. Generate waveforms using Microprocessors. 4. Execute Programs in 8051. 5. Explain the difference between simulator and Emulator.
113	CS6413 OPERATING SYSTEMS LABORATORY	<ul style="list-style-type: none"> 1. Implement deadlock avoidance, and Detection Algorithms. 2. Compare the performance of various CPU Scheduling Algorithm. 3. Critically analyze the performance of the various page replacement algorithms. 4. Create processes and implement IPC.
	MA6566 DISCRETE MATHEMATICS	<ul style="list-style-type: none"> 1. Have knowledge of the concepts needed to test the logic of a program. 2. Have an understanding in identifying structures on many levels. 3. Be aware of a class of functions which transform a finite set into another finite set which relates to input and output functions in computer science. 4. Be aware of the counting principles.

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	5.Be exposed to concepts and properties of algebraic structures such as groups, rings and fields.
CS6501 INTERNET PROGRAMMING	1.Create a basic website using HTML and Cascading Style Sheets.
	2.Design and implement dynamic web page with validation using JavaScript objects and by applying different event handling mechanisms.
	3.Design rich client presentation using AJAX.
	4.Design and implement simple web page in PHP, and to present data in XML format.
	5.Design and implement server side programs using Servlets and JSP.
CS6502 OBJECT ORIENTED ANALYSIS AND DESIGN	1.Design and implement projects using OO concepts.
	2.Use the UML analysis and design diagrams.
	3.Apply appropriate design patterns.
	4.Create code from design.
	5.Compare and contrast various testing techniques.
CS6503 THEORY OF COMPUTATION	1.Design Finite State Machine, Pushdown Automata, and Turing Machine.
	2.Explain the Decidability or Undecidability of various problems.
CS6504 COMPUTER GRAPHICS	1.Design two dimensional graphics.
	2.Apply two dimensional transformations.
	3.Design three dimensional graphics.
	4.Apply three dimensional transformations.
	5.Apply Illumination and color models.
	6.Apply clipping techniques to graphics.
	7.Design animation sequences.
CS6511 CASE TOOLS LABORATORY	1.Design and implement projects using OO concepts.
	2.Use the UML analysis and design diagrams.
	3.Apply appropriate design patterns.
	4.Create code from design.
	5.Compare and contrast various testing techniques.

120	CS6512 INTERNET PROGRAMMING LABORATORY	1.Design Web pages using HTML/XML and style sheets	
121		CS6513 COMPUTER GRAPHICS LABORATORY	2.Create user interfaces using Java frames and applets.
			3.Create dynamic web pages using server side scripting.
122		CS6601 DISTRIBUTED SYSTEMS	4.Write Client Server applications.
			5.Use the frameworks JSP Strut, Hibernate, Spring.
			6.Create applications with AJAX.
123	IT6601 MOBILE COMPUTING	1.Create 3D graphical scenes using open graphics library suits.	
		2.Implement image manipulation and enhancement.	
		3.Create 2D animations using tools.	
		1.Discuss trends in Distributed Systems.	
		2.Apply network virtualization.	
124	CS6660 COMPILER DESIGN	3.Apply remote method invocation and objects.	
		4.Design process and resource management systems.	
		1.Explain the basics of mobile telecommunication system.	
125	IT6502 DIGITAL SIGNAL PROCESSING	2.Choose the required functionality at each layer for given application.	
		3.Identify solution for each functionality at each layer.	
		4.Use simulator tools and design Ad hoc networks.	
		5.Develop a mobile application.	
		1.Design and implement a prototype compiler.	
		2. Apply the various optimization techniques.	
		3.Use the different compiler construction tools.	
		1.Perform frequency transforms for the signals.	
		2.Design IIR and FIR filters.	
		3.Finite word length effects in digital filters.	
		1.Identify problems that are amenable to solution by AI methods.	

126	Sixth	CS6659 ARTIFICIAL INTELLIGENCE	2. Identify appropriate AI methods to solve a given problem.
			3. Formalise a given problem in the language/framework of different AI methods.
			4. Implement basic AI algorithms.
			5. Design and carry out an empirical evaluation of different algorithms on a problem formalisation, and state the conclusions that the evaluation supports.
127		CS6611 MOBILE APPLICATION DEVELOPMENT	1. Design and Implement various mobile applications using emulators.
			2. Deploy applications to hand-held devices.
128		CS6612 COMPILER LABORATORY	1. Implement the different Phases of compiler using tools.
			2. Analyze the control flow and data flow of a typical program.
			3. Optimize a given program.
			4. Generate an assembly language program equivalent to a source language program.
129	GE6674 COMMUNICATION AND SOFT SKILLS- LABORATORY BASED	1. Take international examination such as IELTS and TOEFL.	
		2. Make presentations and Participate in Group Discussions.	
		3. Successfully answer questions in interviews.	
130	CS6701 CRYPTOGRAPHY AND NETWORK SECURITY	1. Compare various Cryptographic Techniques.	
		2. Design Secure applications.	
		3. Inject secure coding in the developed applications.	
	CS6702 GRAPH THEORY AND	1. Write precise and accurate mathematical definitions of objects in graph theory.	
		2. Use mathematical definitions to identify and construct examples and to distinguish examples from non-examples.	
		3. Validate and critically assess a mathematical proof.	

131	Seventh	APPLICATIONS	4. Use a combination of theoretical knowledge and independent mathematical thinking in creative investigation of questions in graph theory.
			5. Reason from definitions to construct mathematical proofs.
132		CS6703 GRID AND CLOUD COMPUTING	1. Apply grid computing techniques to solve large scale scientific problems.
			2. Apply the concept of virtualization.
			3. Use the grid and cloud tool kits.
			4. Apply the security models in the grid and the cloud environment.
133		CS6704 RESOURCE MANAGEMENT TECHNIQUES	1. Solve optimization problems using simplex method.
			2. Apply integer programming and linear programming to solve real-life applications.
			3. Use PERT and CPM for problems in project management.
134		CS6711 SECURITY LABORATORY	1. Implement the cipher techniques.
		2. Develop the various security algorithms.	
		3. Use different open source tools for network security and analysis.	
135	CS6712 GRID AND CLOUD COMPUTING LABORATORY	1. Use the grid and cloud tool kits.	
		2. Design and implement applications on the Grid.	
		3. Design and Implement applications on the Cloud.	
136	Eighth	CS6801 MULTI-CORE ARCHITECTURES AND PROGRAMMING	1. Program Parallel Processors.
			2. Develop programs using OpenMP and MPI.
			3. Compare and contrast programming for serial processors and programming for parallel processors.
137		CS6811 PROJECT WORK	On Completion of the project work students will be in a position to take up any challenging practical problems and find solution by formulating proper methodology.

138			MA6351 TRANSFORMS AND PARTIAL DIFFERENTIAL EQUATIONS	The understanding of the mathematical principles on transforms and partial differential equations would provide them the ability to formulate and solve some of the physical problems of engineering.
139			CS6301 PROGRAMMING AND DATA STRUCTURES II	<ol style="list-style-type: none"> 1. Design problem solutions using Object Oriented Techniques. 2. Apply the concepts of data abstraction, encapsulation and inheritance for problem solutions. 3. Use the control structures of C++ appropriately. 4. Critically analyse the various algorithms. 5. Apply the different data structures to problem solutions.
140			CS6302 DATABASE MANAGEMENT SYSTEMS	<ol style="list-style-type: none"> 1. Design Databases for applications. 2. Use the Relational model, ER diagrams. 3. Apply concurrency control and recovery mechanisms for practical problems. 4. Design the Query Processor and Transaction Processor. 5. Apply security concepts to databases.
141			CS6303 COMPUTER ARCHITECTURE	<ol style="list-style-type: none"> 1. Design arithmetic and logic unit. 2. Design and analyse pipelined control units. 3. Evaluate performance of memory systems. 4. Understand parallel processing architectures.
142		Third	CS6304 ANALOG AND DIGITAL COMMUNICATION	<ol style="list-style-type: none"> 1. Apply analog and digital communication techniques. 2. Use data and pulse communication techniques. 3. Analyze Source and Error control coding. 4. Utilize multi-user radio communication.
			GE6351 ENVIRONMENTAL SCIENCE AND	<ol style="list-style-type: none"> 1. Public awareness of environmental is at infant stage. 2. Ignorance and incomplete knowledge has lead to misconceptions.

143	ENGINEERING	3.Development and improvement in std. of living has lead to serious environmental disasters.
144	IT6311 PROGRAMMING AND DATA STRUCTURES LABORATORY II	1.Design and implement C++ programs for manipulating stacks, queues, linked lists, trees, and graphs.
		2.Apply good programming design methods for program development.
		3.Apply the different data structures for implementing solutions to practical problems.
		4.Develop recursive programs using trees and graphs.
145	IT6312 DATABASE MANAGEMENT SYSTEMS LABORATORY	1.Design and implement a database schema for a given problem-domain.
		2.Populate and query a database
		3.Create and maintain tables using PL/SQL.
		4.Prepare reports.
146	IT6313 DIGITAL COMMUNICATION LABORATORY	To develop necessary skill in designing, analyzing and constructing digital electronic circuits.
147	MA6453 PROBABILITY AND QUEUING THEORY	1.The students will have a fundamental knowledge of the probability concepts.
		2.Acquire skills in analyzing queueing models.
		3.It also helps to understand and characterize phenomenon which evolve with respect to time in a probabilistic manner.
148	EC6504 MICROPROCESSOR AND MICROCONTROLLER	1.Design and implement programs on 8086 microprocessor.
		2.Design I/O circuits.
		3.Design Memory Interfacing circuits.
		4.Design and implement 8051 microcontroller based systems.
	CS6402 DESIGN AND ANALYSIS OF	1.Design algorithms for various computing problems. 2.Analyze the time and space complexity of algorithms.

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Fourth	ANALYSIS OF ALGORITHMS	3.Critically analyze the different algorithm design techniques for a given problem.
		4.Modify existing algorithms to improve efficiency.
	CS6401 OPERATING SYSTEMS	1.Design various Scheduling algorithms.
		2.Apply the principles of concurrency.
		3.Design deadlock, prevention and avoidance algorithms.
		4.Compare and contrast various memory management schemes.
		5.Design and Implement a prototype file systems.
		6.Perform administrative tasks on Linux Servers.
	CS6403 SOFTWARE ENGINEERING	1.Identify the key activities in managing a software project.
		2.Compare different process models.
		3.Concepts of requirements engineering and Analysis Modeling.
		4.Apply systematic procedure for software design and deployment.
		5.Compare and contrast the various testing and maintenance.
	IT6411 MICROPROCESSOR AND MICROCONTROLLER LABORATORY	1.Write ALP Programmes for fixed and Floating Point and Arithmetic.
		2.Interface different I/Os with processor.
		3.Generate waveforms using Microprocessors.
		4.Execute Programs in 8051.
		5.Explain the difference between simulator and Emulator.
	IT6412 OPERATING SYSTEMS LABORATORY	1.Implement deadlock avoidance, and Detection Algorithms.
		2.Compare the performance of various CPU Scheduling Algorithm.
	3.Critically analyze the performance of the various page replacement algorithms.	
	4.Create processes and implement IPC.	

154	B.E. (INFORMATION TECHNOLOGY)	IT6413 SOFTWARE ENGINEERING LABORATORY	<ol style="list-style-type: none"> 1. Use open source case tools to develop software. 2. Analyze and design software requirements in efficient manner. 	
155		CS6551 COMPUTER NETWORKS	<ol style="list-style-type: none"> 1. Identify the components required to build different types of networks. 2. Choose the required functionality at each layer for given application. 3. Identify solution for each functionality at each layer. 4. Trace the flow of information from one node to another node in the network. 	
156		IT6501 GRAPHICS AND MULTIMEDIA	<ol style="list-style-type: none"> 1. Effectively and creatively solve a wide range of graphic design problems. 2. Form effective and compelling interactive experiences for a wide range of audiences. 3. Use various software programs used in the creation and implementation of multi-media (interactive, motion/animation, presentation, etc.). 4. Discuss issues related to emerging electronic technologies and graphic design. 	
157		CS6502 OBJECT ORIENTED ANALYSIS AND DESIGN	<ol style="list-style-type: none"> 1. Design and implement projects using OO concepts. 2. Use the UML analysis and design diagrams. 3. Apply appropriate design patterns. 4. Create code from design. 5. Compare and contrast various testing techniques. 	
158		IT6502 DIGITAL SIGNAL PROCESSING	<ol style="list-style-type: none"> 1. Perform frequency transforms for the signals. 2. Design IIR and FIR filters. 3. Finite word length effects in digital filters. 	
159		IT6503 WEB PROGRAMMING	<ol style="list-style-type: none"> 1. Design web pages. 2. Use technologies of Web Programming. 3. Apply object oriented aspects to Scripting. 4. Create databases with connectivity using JDBC. 5. Build web based application using sockets. 	
				<ol style="list-style-type: none"> 1. Characterize wireless channels.

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160	EC6801 WIRELESS COMMUNICATION	<ul style="list-style-type: none"> 2.Design and implement various signaling schemes for fading channels. 3.Design a cellular system 4.Compare multipath mitigation techniques and analyze their performance. 5.Design and implement systems with transmit/receive diversity and MIMO systems and analyze their performance.
161	IT6511 NETWORKS LABORATORY	<ul style="list-style-type: none"> 1.Use simulation tools. 2.Implement the various protocols. 3.Analyse the performance of the protocols in different layers. 4.Analyze various routing algorithms.
162	IT6512 WEB PROGRAMMING LABORATORY	<ul style="list-style-type: none"> 1.Design Web pages using HTML/DHTML and style sheets. 2.Design and Implement database applications. 3.Create dynamic web pages using server side scripting. 4.Write Client Server applications.
163	IT6513 CASE TOOLS LABORATORY	<ul style="list-style-type: none"> 1.Design and implement projects using OO concepts. 2.Use the UML analysis and design diagrams. 3.Apply appropriate design patterns. 4.Create code from design. 5.Compare and contrast various testing techniques.
164	CS6601 DISTRIBUTED SYSTEMS	<ul style="list-style-type: none"> 1.Discuss trends in Distributed Systems. 2.Apply network virtualization. 3.Apply remote method invocation and objects. 4.Design process and resource management systems.
	IT6601 MOBILE	<ul style="list-style-type: none"> 1.Explain the basics of mobile telecommunication system. 2.Choose the required functionality at each layer for given application.

165	Sixth	COMPUTING	3. Identify solution for each functionality at each layer.
			4. Use simulator tools and design Ad hoc networks.
			5. Develop a mobile application.
166		CS6659 ARTIFICIAL INTELLIGENCE	1. Identify problems that are amenable to solution by AI methods.
			2. Identify appropriate AI methods to solve a given problem.
			3. Formalise a given problem in the language/framework of different AI methods.
			4. Implement basic AI algorithms.
			5. Design and carry out an empirical evaluation of different algorithms on a problem formalisation, and state the conclusions that the evaluation supports.
167		CS6660 COMPILER DESIGN	1. Design and implement a prototype compiler.
			2. Apply the various optimization techniques.
		3. Use the different compiler construction tools.	
168	IT6602 SOFTWARE ARCHITECTURES	1. Explain influence of software architecture on business and technical activities.	
		2. Identify key architectural structures.	
		3. Use styles and views to specify architecture.	
		4. Design document for a given architecture.	
169	IT6611 MOBILE APPLICATION DEVELOPMENT	1. Design and Implement various mobile applications using emulators.	
		2. Deploy applications to hand-held devices.	
170	IT6612 COMPILER LABORATORY	1. Implement the different Phases of compiler using tools.	
		2. Analyze the control flow and data flow of a typical program.	
		3. Optimize a given program.	
		4. Generate an assembly language program equivalent to a source language program.	

171		GE6674 COMMUNICATION AND SOFT SKILLS- LABORATORY COURSE	<p>1.Take international examination such as IELTS and TOEFL.</p> <p>2. Make presentations and Participate in Group Discussions.</p> <p>3. Successfully answer questions in interviews.</p>
172	Seventh	IT6701 INFORMATION MANAGEMENT	<p>1.Cover core relational database topics including logical and physical design and modeling.</p> <p>2.Design and implement a complex information system that meets regulatory requirements; define and manage an organization's key master data entities.</p> <p>3.Design, Create and maintain data warehouses.</p> <p>4.Learn recent advances in NOSQL , Big Data and related tools.</p>
173		CS6701 CRYPTOGRAPHY AND NETWORK SECURITY	<p>1.Compare various Cryptographic Techniques.</p> <p>2.Design Secure applications.</p> <p>3.Inject secure coding in the developed applications.</p>
174		IT6702 DATA WAREHOUSING AND DATA MINING	<p>1.Apply data mining techniques and methods to large data sets.</p> <p>2.Use data mining tools.</p> <p>3.Compare and contrast the various classifiers.</p>
175		CS6703 GRID AND CLOUD COMPUTING	<p>1.Apply grid computing techniques to solve large scale scientific problems.</p> <p>2.Apply the concept of virtualization.</p> <p>3.Use the grid and cloud tool kits.</p> <p>4.Apply the security models in the grid and the cloud environment.</p>
176		IT6711 DATA MINING LABORATORY	<p>1.Apply data mining techniques and methods to large data sets.</p> <p>2.Use data mining tools.</p> <p>3.Compare and contrast the various classifiers.</p>
		IT6712 SECURITY	<p>1.Implement the cipher techniques.</p> <p>2.Develop the various security algorithms.</p>

178			LABORATORY	3. Use different open source tools for network security and analysis.
179			IT6713 GRID AND CLOUD COMPUTING LABORATORY	1. Use the grid and cloud tool kits. 2. Design and implement applications on the Grid. 3. Design and Implement applications on the Cloud.
180		Eighth	IT6801 SERVICE ORIENTED ARCHITECTURE	1. Build applications based on XML. 2. Develop web services using technology elements. 3. Build SOA-based applications for intra-enterprise and inter-enterprise applications.
181			IT6811 PROJECT WORK	On Completion of the project work students will be in a position to take up any challenging practical problems and find solution by formulating proper methodology.
182			MA6351 TRANSFORMS AND PARTIAL DIFFERENTIAL EQUATIONS	The understanding of the mathematical principles on transforms and partial differential equations would provide them the ability to formulate and solve some of the physical problems of engineering.
183			EE6352 ELECTRICAL ENGINEERING AND INSTRUMENTATION	1. The three phase supply and power measurement. 2. The concepts in electrical generators, motors and transformers. 3. The basic measurement and instrumentation based devices. 4. The relevance of digital instruments in measurements.
184			EC6301 OBJECT ORIENTED PROGRAMMING AND DATA STRUCTURES	1. Explain the concepts of Object oriented programming. 2. Write simple applications using C++. 3. Discuss the different methods of organizing large amount of data.
185			EC6302 DIGITAL ELECTRONICS	1. Analyze different methods used for simplification of Boolean expressions. 2. Design and implement Combinational circuits. 3. Design and implement synchronous and asynchronous sequential circuits.

			4. Write simple HDL codes for the circuits.
186	Third	EC6303 SIGNALS AND SYSTEMS	1. Analyze the properties of signals & systems. 2. Apply Laplace transform, Fourier transform, Z transform and DTFT in signal analysis. 3. Analyze continuous time LTI systems using Fourier and Laplace Transforms. 4. Analyze discrete time LTI systems using Z transform and DTFT .
187		EC6304 ELECTRONIC CIRCUITS- I	1. Design circuits with transistor biasing. 2. Design simple amplifier circuits. 3. Analyze the small signal. equivalent circuits of transistors. 4. Design and analyze large signal amplifier.
188		EC6311 ANALOG AND DIGITAL CIRCUITS LABORATORY	1. Differentiate cascade and cascade amplifier. 2. Analyze the limitation in bandwidth of single stage and multi stage amplifier. 3. Simulate amplifiers using Spice. 4. Measure CMRR in differential amplifier.
189		EC6312 OOPS AND DATA STRUCTURES LABORATORY	1. Design and implement C++ programs for manipulating stacks, queues, linked lists, trees, and graphs. 2. Apply good programming design methods for program development. 3. Apply the different data structures for implementing solutions to practical problems.
190		MA6451 PROBABILITY AND RANDOM PROCESSES	The students will have an exposure of various distribution functions and help in acquiring skills in handling situations involving more than one variable. Able to analyze the response of random inputs to linear time invariant systems.
191		EC6401 ELECTRONIC CIRCUITS II	1. Design and analyze feedback amplifiers. 2. Design LC and RC oscillators, tuned amplifiers, wave shaping circuits, multivibrators, blocking oscillators and time base generators.

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Fourth	EC6402 COMMUNICATION THEORY	3. Analyze performance of tuned amplifiers.
		1. Design AM communication systems.
		2. Design Angle modulated communication systems.
		3. Apply the concepts of Random Process to the design of Communication systems.
		4. Analyze the noise performance of AM and FM systems.
	EC6403 ELECTROMAGNETIC FIELDS	1. Analyze field potentials due to static changes and static magnetic fields.
		2. Explain how materials affect electric and magnetic fields.
		3. Analyze the relation between the fields under time varying situations.
		4. Discuss the principles of propagation of uniform plane waves.
	EC6404 LINEAR INTEGRATED CIRCUITS	1. Design linear and non linear applications of op – amps.
		2. Design applications using analog multiplier and PLL.
		3. Design ADC and DAC using op – amps.
		4. Generate waveforms using op – amp circuits.
		5. Analyze special function ICs.
	EC6405 CONTROL SYSTEM ENGINEERING	1. Perform time domain and frequency domain analysis of control systems required for stability analysis.
		2. Design the compensation technique that can be used to stabilize control systems. .
	EC6411 CIRCUITS AND SIMULATION INTEGRATED LABORATORY	1. Analyze various types of feedback amplifiers.
		2. Design oscillators, tuned amplifiers, wave-shaping circuits and multivibrators.
		3. Design and simulate feedback amplifiers, oscillators, tuned amplifiers, wave-shaping circuits and multivibrators using SPICE Tool.

197	EC6412 LINEAR INTEGRATED CIRCUITS LABORATORY	<ol style="list-style-type: none"> 1. Design oscillators and amplifiers using operational amplifiers. 2. Design filters using Opamp and perform experiment on frequency response. 3. Analyse the working of PLL and use PLL as frequency multiplier. 4. Design DC power supply using ICs. 5. Analyse the performance of oscillators and multivibrators using SPICE.
198	EE6461 ELECTRICAL ENGINEERING AND CONTROL SYSTEM LABORATORY	<ol style="list-style-type: none"> 1. Perform experiments to study the load characteristics of DC motors / generators. 2. Design bridge network circuit to measure the values of passive component. 3. Analyse the stability of linear system through simulation software. 4. Obtain transfer function of DC generators.
199	EC6501 DIGITAL COMMUNICATION	<ol style="list-style-type: none"> 1. Design PCM systems. 2. Design and implement base band transmission schemes. 3. Design and implement band pass signaling schemes. 4. Analyze the spectral characteristics of band pass signaling schemes and their noise performance . 4. Design error control coding schemes.
200	EC6502 PRINCIPLES OF DIGITAL SIGNAL PROCESSING	<ol style="list-style-type: none"> 1. apply DFT for the analysis of digital signals & systems. 2. design IIR and FIR filters. 3. characterize finite Word length effect on filters. 4. design the Multirate Filters 5. apply Adaptive Filters to equalization.
201	EC6503 TRANSMISSION LINES AND WAVE GUIDES	<ol style="list-style-type: none"> 1. Discuss the propagation of signals through transmission lines. 2. Analyze signal propagation at Radio frequencies. 3. Explain radio propagation in guided systems.

				4. Utilize cavity resonators.
202			GE6351 ENVIRONMENTAL SCIENCE AND ENGINEERING	1. Public awareness of environment at infant stage. 2. Ignorance and incomplete knowledge has lead to misconceptions. 3. Development and improvement in standard of living has lead to serious environmental disasters.
203		Fifth	EC6504 MICROPROCESSOR AND MICROCONTROLLER	1. Design and implement programs on 8086 microprocessor. 2. Design I/O circuits. 3. Design Memory Interfacing circuits. 4. Design and implement 8051 microcontroller based systems.
204			EC6511 DIGITAL SIGNAL PROCESSING LABORATORY	1. Carry out simulation of DSP systems. 2. Demonstrate their abilities towards DSP processor based implementation of DSP systems. 3. Analyze Finite word length effect on DSP systems. 4. Demonstrate the applications of FFT to DSP. 5. Implement adaptive filters for various applications of DSP.
205	B.E. (ELECTRONICS AND COMMUNICATION ENGINEERING)		EC6512 COMMUNICATION SYSTEMS LABORATORY	1. Simulate end-to-end Communication Link. 2. Demonstrate their knowledge in base band signaling schemes through implementation of FSK, PSK and DPSK. 3. Apply various channel coding schemes & demonstrate their capabilities towards the improvement of the noise performance of communication system. 4. Simulate & validate the various functional modules of a communication system.
206			EC6513 MICROPROCESSOR AND MICROCONTROLLER	1. Write ALP Programmes for fixed and Floating Point and Arithmetic. 2. Interface different I/Os with processor. 3. Generate waveforms using Microprocessors. 4. Execute Programs in 8051.

		LABORATORY	5. Explain the difference between simulator and Emulator.
207		MG6851 PRINCIPLES OF MANAGEMENT	Upon completion of the course, students will be able to have clear understanding of managerial functions like planning, organizing, staffing, leading & controlling and have same basic knowledge on international aspect of management.
208		CS6303 COMPUTER ARCHITECTURE	1.Design arithmetic and logic unit. 2. Design and analyse pipelined control units. 3. Evaluate performance of memory systems. 4. Understand parallel processing architectures.
209		CS6551 COMPUTER NETWORKS	1. Identify the components required to build different types of networks. 2. Choose the required functionality at each layer for given application. 3. Identify solution for each functionality at each layer. 4. Trace the flow of information from one node to another node in the network.
210		EC6601 VLSI DESIGN	1. Explain the basic CMOS circuits and the CMOS process technology. 2. Discuss the techniques of chip design using programmable devices. 3. Model the digital system using Hardware Description Language.
211	Sixth	EC6602 ANTENNA AND WAVE PROPAGATION	1.Explain the various types of antennas and wave propagation. 2. Write about the radiation from a current element. 3. Analyze the antenna arrays, aperture antennas and special antennas such as frequency independent and broad band.
			1.Discuss the application of electronics in diagnostic and therapeutic area.

212	EC6001 MEDICAL ELECTRONICS	<ol style="list-style-type: none"> 2. Measure biochemical and various physiological information. 3. Describe the working of units which will help to restore normal functioning.
213	EC6611 COMPUTER NETWORKS LABORATORY	<ol style="list-style-type: none"> 1. Communicate between two desktop computers. 2. Implement the different protocols. 3. Program using sockets. 4. Implement and compare the various routing algorithms. 5. Use simulation tool.
214	EC6612 VLSI DESIGN LABORATORY	<ol style="list-style-type: none"> 1. Write HDL code for basic as well as advanced digital integrated circuits. 2. Import the logic modules into FPGA Boards. 3. Synthesize, Place and Route the digital IPs. 4. Design, Simulate and Extract the layouts of Analog IC Blocks using EDA tools.
215	GE6674 COMMUNICATION AND SOFT SKILLS- LABORATORY BASED	<ol style="list-style-type: none"> 1. Take international examination such as IELTS and TOEFL. 2. Make presentations and Participate in Group Discussions. 3. Successfully answer questions in interviews.
216	EC6701 RF AND MICROWAVE ENGINEERING	<ol style="list-style-type: none"> 1. Explain the active & passive microwave devices & components used in Microwave communication systems. 2. Analyze the multi- port RF networks and RF transistor amplifiers. 3. Generate Microwave signals and design microwave amplifiers. 4. Measure and analyze Microwave signal and parameters.
	EC6702 OPTICAL	<ol style="list-style-type: none"> 1. Discuss the various optical fiber modes, configurations and various signal degradation factors associated with optical fiber.

217		EC6702 OPTICAL COMMUNICATION AND NETWORKS	<p>2. Explain the various optical sources and optical detectors and their use in the optical communication system.</p> <p>3. Analyze the digital transmission and its associated parameters on system performance.</p>
218		EC6703 EMBEDDED AND REAL TIME SYSTEMS	<p>1. Describe the architecture and programming of ARM processor.</p> <p>2. Outline the concepts of embedded systems.</p> <p>3. Explain the basic concepts of real time Operating system design.</p> <p>4. Use the system design techniques to develop software for embedded systems.</p> <p>5. Differentiate between the general purpose operating system and the real time operating system.</p> <p>6. Model real-time applications using embedded-system concepts.</p>
219		IT6005 DIGITAL IMAGE PROCESSING	<p>1. Discuss digital image fundamentals.</p> <p>2. Apply image enhancement and restoration techniques.</p> <p>3. Use image compression and segmentation Techniques.</p> <p>4. Represent features of images.</p>
220		EC6009 ADVANCED COMPUTER ARCHITECTURE	<p>1. Evaluate performance of different architectures with respect to various parameters.</p> <p>2. Analyze performance of different ILP techniques.</p> <p>3. Identify cache and memory related issues in multi-processors.</p>
221		EC6016 OPTO ELECTRONIC DEVICES	<p>1. To design display devices.</p> <p>2. To design optoelectronic detection devices and modulators.</p> <p>3. To design optoelectronic integrated circuits.</p>
	Seventh		1. Write programs in ARM for a specific Application.

222		EC6711 EMBEDDED LABORATORY	2. Interface memory and Write programs related to memory operations.
			3. Interface A/D and D/A convertors with ARM system. 4. Analyse the performance of interrupt. 5. Write programmes for interfacing keyboard, display, motor and sensor. 6. Formulate a mini project using embedded system.
223		EC6712 OPTICAL AND MICROWAVE LABORATORY	1. Analyze the performance of simple optical link. 2. Test microwave and optical components. 3. Analyse the mode characteristics of fiber. 4. Analyse the radiation of pattern of antenna.
224	Eighth	EC6801 WIRELESS COMMUNICATION	1.Characterize wireless channels. 2. Design and implement various signaling schemes for fading channels. 3. Design a cellular system. 4. Compare multipath mitigation techniques and analyze their performance. 5. Design and implement systems with transmit/receive diversity and MIMO systems and analyze their performance.
225		EC6802 WIRELESS NETWORKS	
		GE6075 PROFESSIONAL ETHICS IN ENGINEERING	Upon completion of the course, the student should be able to apply ethics in society, discuss the ethical issues related to engineering and realize the responsibilities and rights in the society.
226			

227			GE6757 TOTAL QUALITY MANAGEMENT	The student would be able to apply the tools and techniques of quality management to manufacturing and services processes.
228			EC6811 PROJECT WORK	On Completion of the project work students will be in a position to take up any challenging practical problems and find solution by formulating proper methodology.
229		Third	MA6351 TRANSFORMS AND PARTIAL DIFFERENTIAL EQUATIONS	The understanding of the mathematical principles on transforms and partial differential equations would provide them the ability to formulate and solve some of the physical problems of engineering.
230			BM6301 BIO CHEMISTRY	Explain the fundamentals of biochemistry.
231			EC6303 SIGNALS AND SYSTEMS	1. Analyze the properties of signals & systems.
				2. Apply Laplace transform, Fourier transform, Z transform and DTFT in signal analysis.
				3. Analyze continuous time LTI systems using Fourier and Laplace Transforms.
				4. Analyze discrete time LTI systems using Z transform and DTFT.
234			BM6302 SENSORS AND MEASUREMENTS	1. Describe the purpose and methods of measurements
				2. Explain different display and recording devices for various applications.
235		EC6301 OBJECT ORIENTED PROGRAMMING AND DATA STRUCTURES	1. Explain the concepts of object oriented programming.	
			2. Write simple applications using C++.	
			3. Discuss the different methods of organizing large amount of data.	
236		BM6303 ANATOMY AND HUMAN PHYSIOLOGY	1. Describe basic structural and functional elements of human body.	
			2. Explain organs and structures involving in system formation and functions.	

			3. Identify all systems in the human body.
237		BM6311 BIOCHEMISTRY AND HUMAN PHYSIOLOGY LABORATORY	1. Do estimation and interpret the changes in bio molecules. 2. Separate and analyze the importance of macromolecules.
238		BM6312 OOPS AND DATA STRUCTURES LABORATORY	1. Design and implement C++ programs for manipulating stacks, queues, linked lists, trees, and graphs. 2. Apply good programming design methods for program development. 3. Apply the different data structures for implementing solutions to practical problems.
239		MA6451 PROBABILITY AND RANDOM PROCESSES	The students will have an exposure of various distribution functions and help in acquiring skills in handling situations involving more than one variable. Able to analyze the response of random inputs to linear time invariant systems.
240		BM6401 MEDICAL PHYSICS	1. Analyze mechanics involved with various physiological systems. 2. Perform derivation of mathematical models related to blood vessels
241		BM6402 BASICS OF ELECTRICAL ENGINEERING	1. Describe principles and applications of transformers. 2. Explain the working of DC Motors, fractional kW motors, AC machines.
242		BM6403 ANALOG AND DIGITAL ICs	1. Explain the application of analog ICs in the designing circuit. 2. Do applications of Digital ICs. 3. Understand the basic of the Digital systems. 4. Design various functional circuits using these ICs.
243	Fourth	BM6404 PATHOLOGY AND MICROBIOLOGY	1. Analyze structural and functional aspects of living organisms. 2. Explain the function of microscope. 3. Discuss the importance of public health.

		4. Describe methods involved in treating the pathological diseases.
244	CS6304 ANALOG AND DIGITAL COMMUNICATION	1. Apply analog and digital communication techniques. 2. Use data and pulse communication techniques. 3. Analyze Source and Error control coding. 4. Utilize multi-user radio communication.
245	BM6411 CIRCUITS AND IC'S LABORATORY	1. Design Circuits using logic gates 2. Build Circuits for different application using opamp. 3. Differentiate between oscillator and wave form generator. 4. Convert Signals from Analog to Digital Vice versa.
246	BM6412 PATHOLOGY AND MICROBIOLOGY LABORATORY	Student can perform practical experiments on tissue processing, cryoprocessing, staining processes etc.
247	BM6501 BIO CONTROL SYSTEMS	Analyze the time and frequency domains of the given system using different mathematical techniques.
248	BM6502 DIAGNOSTIC AND THERAPEUTIC EQUIPMENT- I	1. Use different medical devices applied in measurement of parameters related to cardiology, neurology. 2. Explain about cardiac assist devices, its continuous monitoring and transmission. 3. Measure signals generated by muscles.
249	BM6503 BIO MATERIALS AND ARTIFICIAL ORGANS	1. Analyze different types of Biomaterials and its classification. 2. Perform combinations of materials that could be used as a tissue replacement implant.
250	BM6504 BIOMEDICAL INSTRUMENTATION	1. Perform electrical and non-electrical physiological measurements. 2. Explain the function of bio amplifiers.

251	B.E. (BIO MEDICAL ENGINEERING)	Fifth	EC6504 MICROPROCESSOR AND MICROCONTROLLER	1. Design and implement programs on 8086 microprocessor.
252			MD6501 HOSPITAL MANAGEMENT	2. Design I/O circuits.
253			BM6511 MICROPROCESSOR AND MICROCONTROLLER LABORATORY	3. Design Memory Interfacing circuits.
				4. Design and implement 8051 microcontroller based systems.
				5. Explain the difference between simulator and Emulator.
254			BM6512 BIO MEDICAL	1. Design the amplifier for Bio signal measurements.
255			GE6674 COMMUNICATION AND SOFT SKILLS - LABORATORY BASED	2. Recording and analysis of bio signals.
				1. Take international examination such as IELTS and TOEFL.
256	BM6601 RADIOLOGICAL EQUIPMENT	2. Make presentations and Participate in Group Discussions.		
257	BM6602 BIOMECHANICS	3. Successfully answer questions in interviews.		
		1. Explain the mechanics of physiological systems.		
258	BM6603 DIAGNOSTIC AND THERAPEUTIC EQUIPMENT – II	2. Analyze the biomechanical systems.		
		3. Design orthopaedic applications.		
		1. Explain about measurements of parameters related to respiratory system.		
			2. Describe the measurement techniques of sensory responses.	
			3. Analyze different types and uses of diathermy units.	

			<p>EQUIPMENT - II</p> <p>4. Discuss ultrasound imaging techniques and its usefulness in diagnosis.</p> <p>5. Outline the importance of patient safety against electrical hazard.</p>
259	Sixth	EC6502 PRINCIPLES OF DIGITAL SIGNAL PROCESSING	<p>1. apply DFT for the analysis of digital signals & systems.</p> <p>2. design IIR and FIR filters</p> <p>3. characterize finite Word length effect on filters.</p> <p>4. design the Multirate Filters.</p> <p>5. apply Adaptive Filters to equalization.</p>
260		GE6351 ENVIRONMENTAL SCIENCE AND ENGINEERING	<p>1. Public awareness of environment at infant stage.</p> <p>2. Ignorance and incomplete knowledge has lead to misconceptions.</p> <p>3. Development and improvement in standard of living has lead to serious environmental disasters.</p>
261		BM6611 DIGITAL SIGNAL PROCESSING LABORATORY	<p>1. Carry out simulation of DSP systems.</p> <p>2. Demonstrate their abilities towards DSP processor based implementation of DSP systems.</p> <p>3. Analyze Finite word length effect on DSP systems.</p> <p>4. Demonstrate the applications of FFT to DSP.</p> <p>5. Implement adaptive filters for various applications of DSP.</p>
262		BM6612 DIAGNOSTIC AND THERAPEUTIC EQUIPMENT LABORATORY	<p>The learner is able to analyze the Bio medical signals, to check the safety of any medical equipments and to have the knowledge about therapeutic equipments.</p>
263		BM6701 PATTERN RECOGNITION AND NEURAL NETWORKS	<p>1. Explain the fundamentals of pattern recognition and neural networks.</p> <p>2. Design and apply different pattern recognition techniques to the applications of interest.</p>
		BM6702 MEDICAL	<p>1. Discuss about health informatics and different ICT applications in medicine.</p>

264	Seventh	BM6702 MEDICAL INFORMATICS	2.Explain the function of Hospital Information Systems.	
265		BM6703 MEDICAL OPTICS	1.Demonstrate knowledge of the fundamentals of optical properties of tissues. 2. Describe surgical applications of laser. 3. Describe photonics and its therapeutic applications.	
267		IT6005 DIGITAL IMAGE PROCESSING	1. Discuss digital image fundamentals. 2. Apply image enhancement and restoration techniques. 3. Use image compression and segmentation Techniques. 4. Represent features of images.	
268		BM6711 HOSPITAL TRAINING	OJT	
269		BM6712 DIGITAL IMAGE PROCESSING LABORATORY	1.Perform filtering operations in the image. 2. Use transforms and analyse the characteristics of the image. 3. Write program to analyse the texture of the image. 4. Implement project on simple image processing applications. 5. Apply image processing technique to solve real world problems.	
270		Eighth	BM6801 REHABILITATION ENGINEERING	1.Explain the needs of rehabilitations and its future development. 2.Describe therapeutic exercise techniques, Orthopedic Prosthetics, Orthotics.
271			BM6811 PROJECT WORK	On Completion of the project work students will be in a position to take up any challenging practical problems and find solution by formulating proper methodology.

272			MA6351 TRANSFORMS AND PARTIAL DIFFERENTIAL EQUATIONS	The understanding of the mathematical principles on transforms and partial equations would provide them the ability to formulate and solve some of the physical problems differential of engineering.
273			CE6306 STRENGTH OF MATERIALS	1. Upon completion of this course, the students can able to apply mathematical knowledge to calculate the deformation behavior of simple structures. 2. Critically analyse problem and solve the problems related to mechanical elements and analyse the deformation behavior for different types of loads.
274			CE6451 FLUID MECHANICS AND MACHINERY	1. Upon completion of this course, the students can able to apply mathematical knowledge to predict the properties and characteristics of a fluid. 2. Can critically analyse the performance of pumps and turbines.
275		Third	EC6302 DIGITAL ELECTRONICS	1. Analyze different methods used for simplification of Boolean expressions. 2. Design and implement Combinational circuits. 3. Design and implement synchronous and asynchronous sequential circuits. 4. Write simple HDL codes for the circuits.
276			EE6358 ELECTRICAL MACHINES AND DRIVES	Upon Completion of this subject, the students can able to explain different types of electrical machines and their performance.
278			ME6401 KINEMATICS OF MACHINERY	Upon completion of this course, the students can able to apply fundamentals of mechanism for the design of new mechanisms and analyse them for optimum design.
279			CE6461 FLUID MECHANICS AND MACHINERY LABORATORY	1. Ability to use the measurement equipments for flow measurement. 2. Ability to do performance trust on different fluid machinery.
			EE6362 ELECTRICAL	1. Ability to perform load test on D.C. shunt motor

280		EE6502 ELECTRICAL MACHINES AND DRIVES LABORATORY	<p>2.Ability to perform speed control test</p> <p>3.Ability to do characteristics of different electrical motors</p>
281		MT6311 COMPUTER AIDED MACHINE DRAWING	<p>1.Ability to develop engineering drawing for the industrial component using Indian Standard code of practice.</p> <p>2.Ability to develop 2D and 3D models of the component using manual/software.</p>
282	Fourth	MA6452 STATISTICS AND NUMERICAL METHODS	<p>It helps the students to have a clear perception of the power of statistical and numerical techniques, ideas and would be able to demonstrate the applications of these techniques to problems drawn from industry, management and other engineering fields.</p>
283		ME6505 DYNAMICS OF MACHINES	<p>Upon completion of this course, the Students can able to predict the force analysis in mechanical system and related vibration issues and can able to solve the problem.</p>
284		EC6405 CONTROL SYSTEM ENGINEERING	<p>1.Perform time domain and frequency domain analysis of control systems required for stability analysis.</p> <p>2.Design the compensation technique that can be used to stabilize control systems.</p>
285		ME6352 MANUFACTURING TECHNOLOGY	<p>The Students can able to use different manufacturing process and use this in industry for component production.</p>
286		ME6504 METROLOGY AND MEASUREMENTS	<p>Upon completion of this course, the Students can demonstrate different measurement technologies and use of them in Industrial Components.</p>
287		MT6401 MICROPROCESSORS AND APPLICATIONS	<p>At the end of the course the students will be able to design microprocessor based Systems.</p>

289	B.E. (MECHATRONICS ENGINEERING)	Fifth	MT6411 MICROPROCESSOR LABORATORY	1.Ability to use the microprocessor to perform simple programmes like addition, subtraction, multiplication, division etc., 2.Ability to use the microprocessor for interfacing for conversion of signals.
290			ME6465 MANUFACTURING TECHNOLOGY LABORATORY	1.Ability to use different machine tools to anufacturing gears. 2.Ability to use different machine tools for finishing operations 3.Ability to manufacture tools using cutter grinder 4.Develop CNC part programming
291			ME6511 DYNAMICS LABORATORY	1.Ability to demonstrate the principles of kinematics and dynamics of machinery 2.Ability to use the measuring devices for dynamic testing.
292			ME6503 DESIGN OF MACHINE ELEMENTS	Upon completion of this course, the students can able to successfully design engine Components.
293			EE6503 POWER ELECTRONICS	Ability to understand and analyse, linear and digital electronic circuits.
294			MT6501 SENSORS AND SIGNAL PROCESSING	The students will be able to use Sensors, various electrical and mechanical instruments in industries.
295			GE6351 ENVIRONMENTAL SCIENCE AND ENGINEERING	1.Public awareness of environmental is at infant stage. 2.Ignorance and incomplete knowledge has lead to misconceptions 3.Development and improvement in std. of living has lead to serious environmental disasters
296			MF6505 CNC MACHINING TECHNOLOGY	Upon completion of this course the student and can to provide knowledge on principle, constructional features, programming, tooling and work holding devices in CNC machine tools.

297		MT6502 THERMODYNAMICS PRINCIPLES AND APPLICATIONS	The students will be able to apply the thermodynamics laws in the design of I.C engines , air conditioning and refrigeration equipments.
298		MT6511 POWER ELECTRONICS LABORATORY	1.Ability to use SCR, MOSFET, TRIAC in electronic circuit. 2. Ability to perform characteristic study on the electronics components.
299		MT6512 SENSORS AND SIGNAL PROCESSING LABORATORY	Ability to use the sensors for the measurement of different signals and use of signal processing techniques to convert them to useful signal.
300		MT6513 CNC LABORATORY	1.Ability to write manual part programming using G code and M code for simple components. 2.Ability to operate CNC controlled machine tools.
301		MG6851 PRINCIPLES OF MANAGEMENT	Upon completion of the course, students will be able to have clear understanding of managerial functions like planning, organizing, staffing, leading & controlling and have same basic knowledge on international aspect of management.
302		MT6601 MICROCONTROLLER AND PLC	The students will learn the theory, programming and application of microcontroller And design of systems using Programmable Logic Controllers.
303		MT6602 APPLIED HYDRAULICS AND PNEUMATICS	The students will be able to operate and maintain various pneumatic and hydraulic systems in industrial environments.
304		MT6603 DESIGN OF MECHATRONICS SYSTEM	The students will be able to design systems in echatronics approach using modern software packages.
305	Sixth	MT6604 OBJECT ORIENTED PROGRAMMING IN C++	The students will be able to develop C++ programs for object oriented systems and test the Systems.

306		MT6611 MICRO CONTROLLER AND PLC LABORATORY	Ability to use microcontroller and PLC to control different motor/equipment.
307		MT6612 OBJECT ORIENTED PROGRAMMING LABORATORY	1. Gain the basic knowledge on Object Oriented concepts.
			2. Ability to develop applications using Object Oriented Programming Concepts.
			3. Ability to implement features of object oriented programming to solve real world problems
308		MT6613 APPLIED HYDRAULICS AND PNEUMATIC LABORATORY	1. Ability to design and test hydraulic, pneumatic circuits.
			2. Use of MATLAB/LABVIEW software for simulation of hydraulic, pneumatic and electrical circuits.
309	Seventh	MT6701 MEDICAL MECHATRONICS	The students will be able to design , use and maintain various medical equipments.
310		MT6702 MODELING AND SIMULATION	The students will be able to design and develop products using simulation techniques.
311		MT6703 ROBOTICS AND MACHINE VISION SYSTEM	Upon completion of this course, the students can able to apply the basic engineering
			knowledge for the design of robotics.
312		ME6602 AUTOMOBILE ENGINEERING	1. Upon completion of this course, the students will be able to identify the different components in automobile engineering.
			2. Have clear understanding on different auxiliary and transmission systems usual.
313		MT6711 COMPUTER AIDED DESIGN AND COMPUTER AIDED	The students can able to apply the students can able to apply mathematical knowledge in
			modeling and assembly of parts.
314		MT6712 ROBOTICS LABORATORY	Use of Adam's software and MAT Lab software to model the different types of robots and calculate work volume for different robots.
315	MT6713 DESIGN AND FABRICATION	1. Use of design principles and develop conceptual and engineering design of any components.	

315			FABRICATION PROJECT	2. Ability to fabricate any components using different manufacturing tools.
316		Eighth	MT6801 AUTOMOTIVE ELECTRONICS	The students will be able to use advanced sensors and actuators in the upgradation of automobiles.
317			MT6811 PROJECT WORK	On Completion of the project work students will be in a position to take up any challenging practical problems and find solution by formulating proper methodology.
318		Third	MA6351 TRANSFORMS AND PARTIAL DIFFERENTIAL EQUATIONS	The understanding of the mathematical principles on transforms and partial differential equations would provide them the ability to formulate and solve some of the physical problems of engineering.
319			EE6301 DIGITAL LOGIC CIRCUITS	Ability to understand and analyse, linear and digital electronic circuits.
320			EE6302 ELECTROMAGNETIC THEORY	Ability to understand and apply basic science, circuit theory, Electro-magnetic field theory control theory and apply them to electrical engineering problems.
321			GE6351 ENVIRONMENTAL SCIENCE AND ENGINEERING	1.Public awareness of environmental is at infant stage. 2.Ignorance and incomplete knowledge has lead to misconceptions. 3.Development and improvement in std. of living has lead to serious environmental disasters.
322			EC6202 ELECTRONIC DEVICES AND CIRCUITS	1.To explain the structure of the basic electronic devices. 2.To design applications using the basic electronic devices.
323			EE6303 LINEAR INTEGRATED CIRCUITS AND APPLICATIONS	Ability to understand and analyse, linear and digital electronic circuits.

324		EC6361 ELECTRONICS LABORATORY	Ability to understand and analyse, linear and digital electronic circuits.
325		EE6311 LINEAR AND DIGITAL INTEGRATED CIRCUITS LABORATORY	Ability to understand and analyse, linear and digital electronic circuits.
326	Fourth	MA6459 NUMERICAL METHODS	The students will have a clear perception of the power of numerical techniques, ideas and would be able to demonstrate the applications of these techniques to problems drawn from industry, management and other engineering fields.
327		EE6401 ELECTRICAL MACHINES – I	Ability to model and analyze electrical apparatus and their application to power system.
328		CS6456 OBJECT ORIENTED PROGRAMMING	1.Gain the basic knowledge on Object Oriented concepts. 2.Ability to develop applications using Object Oriented Programming Concepts. 3.Ability to implement features of object oriented programming to solve real world problems.
329		EE6402 TRANSMISSION AND DISTRIBUTION	Ability to understand and analyze power system operation, stability, control and protection.
330		EE6403 DISCRETE TIME SYSTEMS AND SIGNAL PROCESSING	Ability to understand and apply basic science, circuit theory, Electro-magnetic field theory control theory and apply them to electrical engineering problems.
331		EE6404 MEASUREMENTS AND INSTRUMENTATION	Ability to model and analyze electrical apparatus and their application to power system.
		CS6461 OBJECT	1.Gain the basic knowledge on object Oriented concepts.

332	B.E. (ELECTRICAL AND ELECTRONICS ENGINEERING)	Fifth	ORIENTED PROGRAMMING LABORATORY	2. Ability to develop applications using Object Oriented Programming Concepts. 3. Ability to implement features of object oriented programming to solve real world problems.
333			EE6411 ELECTRICAL MACHINES LABORATORY – I	Ability to model and analyze electrical apparatus and their application to power system.
334			EE6501 POWER SYSTEM ANALYSIS	Ability to understand and analyze power system operation, stability, control and protection.
335			EE6502 MICROPROCESSORS AND MICROCONTROLLERS	1. Ability to understand and analyse, linear and digital electronic circuits.
				2. To understand and apply computing platform and software for engineering problems.
336			ME6701 POWER PLANT ENGINEERING	1. Upon completion of this course, the Students can able to understand different types of power plant, and its functions and their flow lines and issues related to them.
				2. Analyse and solve energy and economic related issues in power sectors.
337			EE6503 POWER ELECTRONICS	Ability to understand and analyse, linear and digital electronic circuits.
338			EE6504 ELECTRICAL MACHINES – II	Ability to model and analyze electrical apparatus and their application to power system.
339			IC6501 CONTROL SYSTEMS	Ability to understand and apply basic science, circuit theory, theory control theory
				Signal processing and apply them to electrical engineering problems.
340			EE6511 CONTROL AND INSTRUMENTATION LABORATORY	Ability to understand and apply basic science, circuit theory, Electro-magnetic field theory
				control theory and apply them to electrical engineering problems.
	GE6674 COMMUNICATION	1. Take international examination such as IELTS and TOEFL		

341		COMMUNICATION AND SOFT SKILLS- LABORATORY BASED	2.Make presentations and Participate in Group Discussions.
			3.Successfully answer questions in interviews.
342		EE6512 ELECTRICAL MACHINES LABORATORY - II	Ability to model and analyze electrical apparatus and their application to power system.
343	Sixth	EC6651 COMMUNICATION ENGINEERING	Ability to understand and analyse, linear and digital electronic circuits.
344		EE6601 SOLID STATE DRIVES	Ability to understand and apply basic science, circuit theory, Electro-magnetic field theory control theory and apply them to electrical engineering problems.
345		EE6602 EMBEDDED SYSTEMS	Ability to understand and analyse, linear and digital electronic circuits.
346		EE6603 POWER SYSTEM OPERATION AND CONTROL	Ability to understand and analyze power system operation, stability, control and protection.
347		EE6604 DESIGN OF ELECTRICAL MACHINES	Ability to model and analyze electrical apparatus and their application to power system.
348		EE6002 POWER SYSTEM TRANSIENTS	Ability to understand and analyze power system operation, stability, control and protection.
349		EE6611 POWER ELECTRONICS AND DRIVES LABORATORY	Ability to understand and analyse, linear and digital electronic circuits.
		EE6612 MICROPROCESSORS AND MICROCONTROLLERS	1.Ability to understand and analyse, linear and digital electronic circuits.
350			2.To understand and apply computing platform and software for engineering problems.

351		EE6613 PRESENTATION SKILLS AND	1.Ability to review, prepare and present technological developments 2.Ability to face the placement interviews	
352	Seventh	EE6701 HIGH VOLTAGE ENGINEERING	Ability to understand and analyze power system operation, stability, control and protection.	
353		EE6702 PROTECTION AND SWITCHGEAR	Ability to understand and analyze power system operation, stability, control and protection.	
354		EE6703 SPECIAL ELECTRICAL MACHINES	Ability to model and analyze electrical apparatus and their application to power system.	
355		MG6851 PRINCIPLES OF MANAGEMENT	Upon completion of the course, students will be able to have clear understanding of managerial functions like planning, organizing, staffing, leading & controlling and have same basic knowledge on international aspect of management.	
356		EE6004 FLEXIBLE AC TRANSMISSION SYSTEMS	Ability to understand and analyze power system operation, stability, control and protection.	
357		EE6008 MICROCONTROLLER BASED SYSTEM DESIGN	1. To understand and apply computing platform and software for engineering problems. 2. To understand ethical issues, environmental impact and acquire management skills.	
358		EE6711 POWER SYSTEM SIMULATION LABORATORY	Ability to understand and analyze power system operation, stability, control and protection.	
359		EE6712 COMPREHENSION	Ability to review, prepare and present technological developments.	
360			EE6801 ELECTRIC ENERGY GENERATION, UTILIZATION AND	1.Ability to understand and analyze power system operation, stability, control and protection. 2.Ability to handle the engineering aspects of electrical energy generation and utilization.

361	Eighth	EE6010 HIGH VOLTAGE DIRECT CURRENT TRANSMISSION	Ability to understand and analyze power system operation, stability, control and protection.
362		GE6075 PROFESSIONAL ETHICS IN ENGINEERING	Upon completion of the course, the student should be able to apply ethics in society, discuss the ethical issues related to engineering and realize the responsibilities and rights in the society.
363		EE6811 PROJECT WORK	On Completion of the project work students will be in a position to take up any challenging practical problems and find solution by formulating proper methodology.

R2013

S.NO	Program Name	Semester	Subject Code & Name	Course Outcome
1.		First	ED7101 Advanced Mechanics of Materials	It helps the students to be familiarized with the stresses under different loading conditions.
2.			ED7102 Computer Applications in Design	With laboratory classes in conjunction, It helps the students to get familiarized with the computer graphics
3.			ED7103 Quality Concepts in Design	It helps the design cum quality engineer to get familiarized with various concepts in design, quality and reliability principles in the design of an engineering product or a service.
4.			ED7104 Vibration Analysis and Control	To make the students understand the basics of vibration, its importance in engineering field. Since vibration is a critical problem today in engineering industries, the students are equipped with the working operations of various vibration measuring instruments, vibration control and analysis techniques in the engineering field.
5.			MA7169 Advanced Numerical Methods	It helps the students to get familiarized with the numerical methods which are necessary to solve numerically the problems that arise in engineering.

6.	M.E. ENGINEERING DESIGN		ED7003 Composite Materials and Mechanics	At the end of the course the students will be in position to understand the mechanics and design related to layered components such as fiber reinforced polymer composites, isotropic layered structures (example electronic chips) etc and its manufacturing methodologies.
7.			ED7111 CAD Lab	With laboratory classes, it helps the students to get familiarized with the computer applications in design and preparing drawings for various mechanical components.
8.		Second	ED7203 Mechanical Behavior of Materials	To familiarize the researchers in the area of material behavior under different loading and selection of materials for the design of engineering structures.
9.			ED7201 Finite Element Methods in Mechanical Design	1. Understand how to mathematically model physical systems and solve using numerical techniques.
				2. Select appropriate element and boundary conditions for various 1D, 2D Boundary problems.
				3. Apply various solution techniques to solve Boundary value problems and Eigen value problems.
10.			ED7204 Integrated Mechanical Design	This will familiarize the students with the concepts of integration of design of machines and structures.
11.			ED7202 Mechanisms Design and Simulation	It helps the students to get familiarized with the advanced mechanisms which are necessary to design and simulate mechanisms.
12.			ED7008 Advanced Metal Forming Techniques	The course would familiarize the students on the latest metal forming techniques and help them decide on the suitable method to form the metals for various industrial applications.
				1. Ability to select material / surface properties based on the tribological requirements.

13.		ED7010 Tribology In Design	<p>2. Methodology for deciding lubricants and lubrication regimes for different operating conditions.</p> <p>3. Analysis ability of different types of bearings for given load/ speed conditions.</p>
14.		ED7211 Analysis and Simulation Lab	It helps the students to get familiarized with the Computer Aided Finite Element Analysis packages which are necessary to solve the engineering problems numerically.
15.		ED7212 Design Project	<p>1. Use of design principles and develop conceptual and engineering design of any components.</p> <p>2. Ability to integrate the parts design with assembly and ability to prepare manufacturing drawings.</p>
16.	Third	ED7002 Engineering Fracture Mechanics	<p>1. It helps the engineers to get familiarized with the design of components that contain crack under static load condition.</p> <p>2. It helps the engineers to get familiarized with the design of components that contain crack and its growth under fatigue load condition.</p>
17.		ED7004 Design Of Hydraulic And Pneumatic Systems	It helps students to get knowledge on the need, use and application of fluid power and make them familiar to industrial design that lead to automation.
18.		ED7011 Bearing Design And Rotor Dynamics	<p>1. Acquisition of knowledge in the analysis of all types of bearings.</p> <p>2. Ability to make specifications of all types of bearings</p> <p>3. Skill for conducting dynamic / vibration analysis and trouble shooting of bearings</p>
27		MA7158 Applied Mathematics for	1. To achieve an understanding of the basic concepts of algebraic equations and method of solving them.

37.	M.E. COMMUNICATION SYSTEMS	First	Communication Engineers	2. To familiarize the students with special functions and solve problems associated with Engineering applications.
39.			CU7102 Advanced Digital Communication Techniques	1. Develop the ability to understand the concepts of signal space analysis coherent and noncoherent receivers.
				2. Comprehend the generation of OFDM signals and the processing of the signals.
				3. Possess knowledge on different block codes and convolutional codes.
40.		AP7101 Advanced Digital Signal	1. To design adaptive filters for a given application 2. To design multirate DSP systems.	
44.		CU7201 Wireless Communication Networks	1. The students understand the state of art techniques in wireless communication.	
			2. Students are enriched with the knowledge of present day technologies to enable them to face the world and contribute back as researchers.	
45.		CU7202	1. To be able to design RF circuits	
46.		AP7301 Electromagnetic Interference and Compatibility	2. To be able to analyse the performance of RF circuits	
			1. To design a EMI free system	
	2. To reduce system level crosstalk			
	CU7211 Innovative	3. To design high speed Printed Circuit board with minimum interference		
		4. To make our world free from unwanted electromagnetic environment		
			1. The student would be able to identify socially relevant issues and apply his knowledge to evolve feasible solutions.	

50.			System Design Laboratory	2. The student would be able to comprehensively record and report the measured data, write reports, communicate research ideas and do oral presentations effectively.
56.			MA7155 Applied Probability and Statistics	The student will able to acquire the basic concepts of Probability and Statistical techniques for solving mathematical problems which will be useful in solving Engineering problems
58.			CP7102 Advanced Data Structures and Algorithms	1. Design and apply iterative and recursive algorithms.
				2. Design and implement optimisation algorithms in specific applications.
				3. Design appropriate shared objects and concurrent objects for applications.
				4. Implement and apply concurrent linked lists, stacks, and queues.
59.		first	CP7103 Multicore Architectures	1. Identify the limitations of ILP and the need for multicore architectures
				2. Discuss the issues related to multiprocessing and suggest solutions
				3. Point out the salient features of different multicore architectures and how they exploit parallelism
				4. Critically analyze the different types of inter connection networks
				5. Discuss the architecture of GPUs, warehouse-scale computers and embedded processors
62.			CP7111 Advanced Data Structures Laboratory	1. Design and apply iterative and recursive algorithms.
				2. Design and implement algorithms using the hill climbing and dynamic programming and recursive backtracking techniques.
				3. Design and implement optimisation algorithms for specific applications.

			<p style="text-align: center;">LABORATORY</p> <ol style="list-style-type: none"> 4. Design and implement randomized algorithms. 5. Design appropriate shared objects and concurrent objects for applications. 6. Implement and apply concurrent linked lists, stacks, and queues.
64.		CP7201 Theoretical Foundations of Computer Science	<ol style="list-style-type: none"> 1. To explain sets, relations, functions 2. To conduct proofs using induction, pigeonhole principle, and logic 3. To apply counting, permutations, combinations, and recurrence relations 4. To apply recursive functions and lambda calculus 5. To explain logic programming and functional programming principles 6. To apply sequential structures, tree structures, and graph structures 7. To explain computational models, computability, and complexity
65.		CP7202 Advanced Databases	<ol style="list-style-type: none"> 1. Select the appropriate high performance database like parallel and distributed database 2. Model and represent the real world data using object oriented database 3. Design a semantic based database to meaningful data access 4. Embed the rule set in the database to implement intelligent databases 5. Represent the data using XML database for better interoperability 6. Handle Big data and store in a transparent manner in the cloud 7. To solve the issues related to the data storage and retrieval
	M.E. COMPUTER SCIENCE AND		<ol style="list-style-type: none"> 1. Describe syntax and semantics of programming languages

66.	ENGINEERING	Second	CP7203 Principles of Programming Languages	<ol style="list-style-type: none"> 2. Explain data, data types, and basic statements of programming languages 3. Design and implement subprogram constructs 4. Apply object-oriented, concurrency, and event handling programming constructs Develop programs in Scheme, ML, and Prolog 5. Understand and adopt new programming languages
67.			CP7204 Advanced Operating Systems	<ol style="list-style-type: none"> 1. Discuss the various synchronization, scheduling and memory management issues 2. Demonstrate the Mutual exclusion, Deadlock detection and agreement protocols of Distributed operating system 3. Discuss the various resource management techniques for distributed systems 4. Identify the different features of real time and mobile operating systems 5. Install and use available open source kernel 6. Modify existing open source kernels in terms of functionality or features used
70.			CP7211 Advanced Databases Laboratory	<ol style="list-style-type: none"> 1. Work on distributed databases 2. Create and work on object oriented databases 3. Create and work with parallel database 4. Experiment on active database 5. Explore the features of deductive database 6. To work on weka tool for clustering and classification 7. Represent the database using XML and work on it
				<ol style="list-style-type: none"> 1. Develop assigned modules of operating systems design carrying out coding, testing, and documentation work involved. 2. Describe team issues and apply suitable methods to resolve the same.

71.			CP7212 Case Study - Operating Systems Design (TeamWork)	<p>3. Demonstrate individual competence in building medium size operating system components.</p> <p>4. Demonstrate ethical and professional attributes of a computer engineer.</p> <p>5. Prepare suitable plan with clear statements of deliverables, and track the same.</p> <p>6. Make individual presentation of the work carried out.</p> <p>7. Prepare well-organized written documents to communicate individual work accomplished.</p>
72.		Third	CP7301 Software Process and Project Management	<p>1. Explain software development life cycle</p> <p>2. Adopt a suitable process for software development</p> <p>3. Elicit functional and quality requirements</p> <p>4. Analyze, prioritize, and manage requirements</p> <p>5. Perform trade-off among conflicting requirements</p> <p>6. Identify and prioritize risks and create mitigation plans</p> <p>7. Estimate the efforts required for software development</p> <p>8. Perform planning and tracking activities</p> <p>9. Control the artifacts during software development</p> <p>10. Perform various tests to ensure quality</p> <p>11. Define new processes based on the needs</p> <p>12. Adopt best practices for process improvement</p>
78.	M.TECH. INFORMATION TECHNOLOGY		MA7155 Applied Probability and Statistics	<p>The student will able to acquire the basic concepts of Probability and Statistical techniques for solving mathematical problems which will be useful in solving Engineering problems</p>
				<p>1. Design and apply iterative and recursive algorithms.</p>

79.		CP7102 Advanced Data Structures and Algorithms	<ol style="list-style-type: none"> 2. Design and implement optimisation algorithms in specific applications. 3. Design appropriate shared objects and concurrent objects for applications. 4. Implement and apply concurrent linked lists, stacks, and queues.
80.		CP7103 Multicore Architectures	<ol style="list-style-type: none"> 1. Identify the limitations of ILP and the need for multicore architectures 2. Address the issues related to multiprocessing and suggest solutions 3. Bring out the salient features of different multicore architectures and how they exploit parallelism 4. Analyze the different types of inter connection networks 5. Explore the architecture of GPUs, warehouse-scale computers and embedded processors
81.		IF7101 Internetworking Technologies	<ol style="list-style-type: none"> 1. Design and develop network applications using sockets system calls. 2. Compare IPv4 and IPv6 3. Explore the features of Stream Control Transmission Protocol (SCTP) 4. Design and develop network applications using raw socket 5. Design and develop Domain Name Service 6. Incorporate the security features in the socket programming 7. Work with various networking tools such as ping, traceroute to investigate a traffic flow in the network. 8. Extend network applications for broadcasting and multicasting 9. Create innovative network design by applying advanced socket concepts.

82.
83.

First	IF7102 Object Oriented Software Engineering	<ol style="list-style-type: none"> 1. Apply Object Oriented Software Engineering approach in every aspect of software project 2. Analyse the requirements from various domains 3. Evaluate the relationships between Software Design and Software Engineering 4. Adapt appropriate object oriented design aspects in the development process. 5. Implement and test the software project using object oriented approach. 6. Manage the issues regarding the decision making and changes in the different stage of software development 7. Implement mini projects incorporating the principles of object oriented software Engineering.
	CP7202 Advanced Databases	<ol style="list-style-type: none"> 1. Select the appropriate high performance database like parallel and distributed database 2. Model and represent the real world data using object oriented database 3. Design a semantic based database to meaningful data access 4. Embed the rule set in the database to implement intelligent databases 5. Represent the data using XML database for better interoperability 6. Handle Big data and store in a transparent manner in the cloud 7. To solve the issues related to the data storage and retrieval
	IF7111 Advanced	<ol style="list-style-type: none"> 1. Design and apply iterative and recursive algorithms. 2. Design and implement algorithms using the hill climbing and dynamic programming and recursive backtracking techniques.

84.			IF711 Advanced Data Structures Laboratory	<ul style="list-style-type: none"> 3. Design and implement optimisation algorithms for specific applications. 4. Design and implement randomized algorithms. 5. Design appropriate shared objects and concurrent objects for applications. 6. Implement and apply concurrent linked lists, stacks, and queues.
85.			IF7112 Internetworking Laboratory	<ul style="list-style-type: none"> 1. Design network applications using TCP and UDP 2. Demonstrate the usage of various networking tools. 3. Analyze network traffic 4. Analyze packets transmitted over the network.
87.			IF7201 Web Technologies	<ul style="list-style-type: none"> 1. Create interactive web pages using Markup languages, CSS, Java Script. 2. Implement server-Side Programming for creating information sharing and functionality using PHP. 3. Work on XML Technologies 4. Develop Enterprise Applications for online communities in the business world.
88.			IF7202 Cloud Computing	<ul style="list-style-type: none"> 1. Compare the strengths and limitations of cloud computing 2. Identify the architecture, infrastructure and delivery models of cloud computing 3. Apply suitable virtualization concept. 4. Choose the appropriate cloud player 5. Choose the appropriate Programming Models and approach. 6. Address the core issues of cloud computing such as security, privacy and interoperability 7. Design Cloud Services 8. Set a private cloud
				<ul style="list-style-type: none"> 1. Implement basic security algorithms required by any computing system.

89.		Second	NE7202 Network and Information Security	<p>2. Analyze the vulnerabilities in any computing system and hence be able to design a security solution.</p> <p>3. Analyze the possible security attacks in complex real time systems and their effective countermeasures</p> <p>4. Identify the security issues in the network and resolve it.</p> <p>5. Evaluate security mechanisms using rigorous approaches, including theoretical derivation, modeling, and simulations</p> <p>6. Formulate research problems in the computer security field.</p>
90.			IF7203 Data Warehousing and Data Mining	<p>1. Store voluminous data for online processing</p> <p>2. Preprocess the data for mining applications</p> <p>3. Apply the association rules for mining the data</p> <p>4. Design and deploy appropriate classification techniques</p> <p>5. Cluster the high dimensional data for better organization of the data</p> <p>6. Discover the knowledge imbibed in the high dimensional system</p> <p>7. Evolve Multidimensional Intelligent model from typical system</p> <p>8. Evaluate various mining techniques on complex data objects</p>
93.			IF7211 Web Technology Laboratory	<p>1. Develop Web application using HTML and scripting technologies.</p> <p>2. Work on Web application development using advanced features.</p> <p>3. Design and development of dynamic server-side web pages.</p> <p>4. Develop web services using J2EE and related technologies</p>

				5. Design and development applications using JMS and JDBC
94.			IF7212 Cloud Computing Laboratory	1. Demonstrate and experiment simple Cloud Applications
				2. Apply resource allocation, scheduling algorithms.
				3. Implement Map-Reduce concept.
				4. Create virtual machines from available physical resources.
				5. Setup a private cloud.
				6. Familiarize with Open Stack.
96.		Third	IF7301 Soft Computing	1. Implement machine learning through neural networks.
				2. Write Genetic Algorithm to solve the optimization problem
				3. Develop a Fuzzy expert system.
				4. Model Neuro Fuzzy system for clustering and classification.

R2017

S.NO	Program Name	Semester	Subject Code & Name	Course Outcome
1.			MA5156 Applied Mathematics for Engineers	1. Apply various methods in matrix theory to solve system of linear equations.
				2. Maximizing and minimizing the functional that occur in various branches of engineering disciplines.
				3. Computation of probability and moments, standard distributions of discrete and continuous random variables and functions of a random variable.
				4. Application of Laplace and Fourier transforms to initial value, initial boundary value and boundary value problems in Partial Differential Equations.

2.	M.E. ENGINEERING DESIGN
3.	
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First

ED5191 Engineering Fracture Mechanics	1. It helps the engineers to get familiarized with the design of components that contain crack under static load condition.
	2. It helps the engineers to get familiarized with the design of components that contain crack and its growth under fatigue load condition.
ED5151 Computer Applications In Design	1. It helps the students to get familiarized with the computer graphics application in design.
	2. This understanding reinforces the knowledge being learned and shortens the overall learning curve which is necessary to solve CAE problems that arise in engineering.
ED5152 Quality Concepts In Design	It helps the students to get familiarized with various concepts in design, quality and reliability principles in the design of an engineering product or a service.
ED5153 Advanced Finite Element Analysis	1. The students will understand the
	2. Finite Element Formulation of Plate and Shell Elements and its application.
	3. The students will be able to gain knowledge in material & geometric non and plasticity.
	5. The students will be able to solve problems under dynamic conditions by applying various techniques.
	6. The students can arrive at the solutions for fluid mechanics and heat transfer problems.
	7. The students will acquire knowledge in error norms, convergence rates and refinement.
	8. The students will solve the real world engineering problems using FEA.
	ED5091 Design of Material Handling Equipments

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	ED5161 Cad Laboratory	With laboratory classes, it helps the students to get familiarized with the computer applications in design and preparing drawings for various mechanical components.
	ED5251 Mechanisms Design and Simulation	It helps the students to get familiarized with the advanced mechanisms which are necessary to design and simulate mechanisms.
	ED5252 Mechanical Behavior	To familiarize the researchers in the area of material behavior under different loading and selection of materials
	ED5253 Integrated	This will familiarize the students with the concepts of integration of design of machines and structures.
	ED5254 Vibration Analysis And Control	1. This course will help the students to understand the basics of vibration and its importance in engineering field.
		2. The students are equipped with the working operations of various vibration measuring instruments, vibration control and analysis techniques.
	ED5003 Advanced Metal	The course would familiarize the students on the latest metal forming techniques and help them decide on the
	ED5074 Tribology In Design	1. Ability to select material / surface properties based on the tribological requirements
		2. Methodology for deciding lubricants and lubrication regimes for different operating conditions.
		3. Analysis ability of different types of bearings for given load / speed conditions.
	Second	

14.			ED5261 Vibration Laboratory	Upon completion of the course students shall be able to: Derive the equations of motion for vibratory systems. Linearize nonlinear systems so as to allow a linear vibrational analysis. Compute the natural frequency (or frequencies) of vibratory systems and determine the system's modal response. Determine the overall response based upon the initial conditions and/or steady forcing input. Design a passive vibration absorber to ameliorate vibrations in a forced system.
15.			ED5211 Design Project	It helps the students to get familiarized with respect to design standards, design calculations and analysis in
16.			MA5155 Applied Mathematics for Electrical engineers	<ol style="list-style-type: none"> 1. Apply various methods in matrix theory to solve system of linear equations. 2. Maximizing and minimizing the functional that occur in electrical engineering discipline. 3. Computation of probability and moments, standard distributions of discrete and continuous random variables and functions of a random variable. 4. Could develop a fundamental understanding of linear programming models, able to develop a linear programming model from problem description, apply the simplex method for solving linear programming problems.
17.			PX5101 Power Semiconductor Devices	<ol style="list-style-type: none"> 1. Ability to determine the suitable device for the application. 2. Ability to design of semiconductor device and its parameters. 3. Ability to design of protection circuits and control circuits. 4. Ability to determine the reliability of the system.

18.		PX5151 Analysis of Electrical Machines	<ol style="list-style-type: none"> 1. Ability to understand the various electrical parameters in mathematical form. 2. Ability to understand the different types of reference frame theories and transformation relationships. 3. Ability to find the electrical machine equivalent circuit parameters and modeling of electrical machines.
19.	First	PX5152 Analysis and Design of Power Converters	<ol style="list-style-type: none"> 1. Analyze various single phase and three phase power converters 2. Select and design dc-dc converter topologies for a broad range of power conversion applications. 3. Develop improved power converters for any stringent application requirements. 4. Design ac-ac converters for variable frequency applications.
20.		IN5152 System Theory	<ol style="list-style-type: none"> 1. Ability to represent the time-invariant systems in state space form as well as analyze, whether the system is stabilizable, controllable, observable and detectable. 2. Ability to design state feedback controller and state observers 3. Ability to classify singular points and construct phase trajectory using delta and isocline methods. 4. Use the techniques such as describing function, Lyapunov Stability, Popov's Stability Criterion and Circle Criterion to assess the stability of certain class of non-linear system. 5. Ability to describe non-linear behaviors such as Limit cycles, input multiplicity and output multiplicity, Bifurcation and Chaos.
			<ol style="list-style-type: none"> 1. Comprehensive understanding on the switching behaviour of Power Electronic Switches

22.	M.E. POWER ELECTRONICS AND DRIVES		PX5111 Power Electronics Circuits Lab	<p>2. Comprehensive understanding on mathematical modeling of power electronic system and ability to implement the same using simulation tools</p> <p>3. Ability of the student to use microcontroller and its associated IDE* for power electronic applications</p> <p>4. Ability of the student to design and implement analog circuits for Power electronic control applications</p> <p>5. Ability to design and fabricate a power converter circuit at a reasonable power level</p> <p>6. Exposure to PCB designing and fabrication</p> <p>7. * IDE – Integrate Development Environment (Code Composer Studio for Texas Instrument/MPLAB for PIC microcontrollers etc)</p>
23.			PX5201 Analysis and Design of Inverters	<p>1. Will get expertise in the working modes and operation of inverters.</p> <p>2. Will be able to design single phase and three phase inverters.</p> <p>3. Will equip skills to formulate and design the inverters for generic loads and machine loads.</p> <p>4. Will acquire knowledge on multilevel inverters and modulation techniques.</p>
24.			PX5202 Solid State Drives	<p>1. Will be able to formulate, design and analyze power supplies for generic loads and machine loads.</p> <p>2. Will acquire knowledge on the operation of VSI and CSI fed induction motor drives.</p> <p>3. Will get expertise in the field oriented control of Induction motor drives.</p> <p>4. Will be able to formulate the control schemes for synchronous motor drives.</p>
25			PX5251 Special	<p>1. Understand the open loop and closed loop systems stepper motors.</p> <p>2. Understanding the classifications and characteristics of special machines</p>

25.		Second	Electrical Machines	<p>3. Understanding of the control methods of special motors.</p> <p>4. Ability to select the suitable motor for a certain job under given conditions.</p>
26.			PX5252 Power Quality	<p>1. Ability to formulate, design and simulate power supplies for generic load and machine loads.</p> <p>2. Ability to conduct harmonic analysis and load tests on power supplies and drive systems.</p> <p>3. Ability to understand and design load compensation methods useful for mitigating power quality problems.</p>
29.			PX5211 Electrical Drives Laboratory	<p>1. Ability to simulate different types of machines, converters in a system.</p> <p>2. Analyze the performance of various electric drive systems.</p> <p>3. Ability to perform both hardware and software simulation.</p>
30.			PX5212 Mini Project	<p>1. Acquire practical knowledge within the chosen area of technology for project development.</p> <p>2. Identify, analyze, formulate and handle programming projects with a comprehensive and systematic approach.</p> <p>3. Contribute as an individual or in a team in development of technical projects.</p> <p>4. Develop effective communication skills for presentation of project related activities.</p>

31.			MA5154 Applied Mathematics for Communication Engineers	<p>3. Could develop a fundamental understanding of linear programming models, able to develop a linear programming model from problem description, apply the simplex method for solving linear programming problems.</p> <p>4. Numerical solution of differential equations by single and multistep methods.</p> <p>5. Computation of probability, random variables and their associated distributions, correlations and regression.</p> <p>6. Conceptualize the principle of optimality and sub-optimization, formulation and computational procedure of dynamic programming.</p> <p>7. Exposing the basic characteristic features of a queuing system and acquire skills in analyzing queuing models.</p> <p>8. Using discrete time Markov chains to model computer systems.</p>
32.			CU5191 Advanced Radiation Systems	<p>1. Ability to understand antenna concepts</p> <p>2. Ability to design antenna for various applications</p> <p>3. Knowledge of modern antenna design</p>
33.			CU5151 Advanced Digital Communication Techniques	<p>1. Develop the ability to understand the concepts of signal space analysis for coherent and non-coherent receivers.</p> <p>2. Conceptually appreciate different Equalization techniques</p> <p>3. Possess knowledge on different block codes and convolutional codes.</p> <p>4. Comprehend the generation of OFDM signals and the techniques of multiuser detection.</p>
		First		<p>1. Formulate time domain and frequency domain description of Wide Sense Stationary process in terms of matrix algebra and relate to linear algebra concepts.</p>

34.	M.E. COMMUNICATION SYSTEMS	AP5152 Advanced Digital Signal Processing	2. State Parseval's theorem, W-K theorem, principle of orthogonality, spectral factorization theorem, Widrow-Hoff LMS algorithm and Shannon's sampling theorem, and define linear prediction, linear estimation, sample auto-correlation, periodogram, bias and consistency.
			3. Explain various noise types, Yule-Walker algorithm, parametric and non-parametric methods, Wiener and Kalman filtering, LMS and RMS algorithms, Levinson Durbin algorithm, adaptive noise cancellation and adaptive echo cancellation, speed versus convergence issues, channel equalization, sampling rate change, subband coding and wavelet transform.
			4. Calculate mean, variance, auto-correlation and PSD for WSS stochastic processes, and derive prediction error criterion, Wiener-Hoff equations, Parseval's theorem, W-K theorem and normal equations.
			5. Design AR, MA, ARMA models, Wiener filter, anti aliasing and anti imaging filters, and develop FIR adaptive filter and polyphase filter structures.
			6. Simulate spectral estimation algorithms and basic models on computing platform.
			35.
37.	CU5161 Communication Systems Laboratory	1. Measure and analyze various transmission line parameters. 2. Design Microstrip patch antennas. 3. Implement the adaptive filtering algorithms 4. To generate and detect digital communication signals of various modulation techniques using MATLAB.	

				5. Evaluate cellular mobile communication technology and propagation model.
38.		Second	CU5291 Advanced Wireless Communication Systems	1. Analyze MIMO system. 2. Discuss millimeter wave communication. 3. Demonstrate software defined radio and cognitive radio.
39.	CU5201 MIC and RF System Design		1. Capability to design RF circuits. 2. To be able to analyze RF circuits.	
40.	CU5292 Electromagnetic Interference and		1. Identify Standards 2. Compare EMI test methods 3. Discuss EMI mitigation techniques	
44.	CU5211 RF System Design Laboratory		1. Apply knowledge to identify a suitable architecture and systematically design an RF system. 2. Comprehensively record and report the measured data, and would be capable of analyzing, interpreting the experimentally measured data and produce the meaningful conclusions. 3. Design and develop micro strip filters.	
46.			MA5160 Applied Probability and Statistics	1. Basic probability axioms and rules and the moments of discrete and continuous random variables. 2. Consistency, efficiency and unbiasedness of estimators, method of maximum likelihood estimation and Central Limit Theorem. 3. Use statistical tests in testing hypotheses on data. 4. Perform exploratory analysis of multivariate data, such as multivariate normal density, calculating descriptive statistics, testing for multivariate normality.
				1. Design data structures and algorithms to solve computing problems

47.			CP5151 Advanced Data Structures and Algorithms	2. Design algorithms using graph structure and various string matching algorithms to solve real-life problems
48.			CP5152 Advanced Computer Architecture	3. Apply suitable design strategy for problem solving 1. Identify the limitations of ILP. 2. Discuss the issues related to multiprocessing and suggest solutions 3. Point out the salient features of different multicore architectures and how they exploit parallelism. 4. Discuss the various techniques used for optimising the cache performance 5. Design hierarchal memory system 6. Point out how data level parallelism is exploited in architectures
49.		First	CP5153 Operating System Internals	1. To explain the functionality of a large software system by reading its source. 2. To revise any algorithm present in a system. 3. To design a new algorithm to replace an existing one. 4. To apyropriately modify and use the data structures of the linux kernel for a different software system.
50.			CP5154 Advanced Software Engineering	1. Understand the advantages of various Software Development Lifecycle Models 2. Gain knowledge on project management approaches as well as cost and schedule estimation strategies 3. Perform formal analysis on specifications 4. Use UML diagrams for analysis and design 5. Architect and design using architectural styles and design patterns 6. Understand software testing approaches

	M.E. COMPUTER SCIENCE AND ENGINEERING		7. Understand the advantages of DevOps practices
51.		CP5191 Machine Learning Techniques	1. Distinguish between, supervised, unsupervised and semi-supervised learning
			2. Apply the appropriate machine learning strategy for any given problem
			3. Suggest supervised, unsupervised or semi-supervised learning algorithms for any given problem
			4. Design systems that uses the appropriate graph models of machine learning
			5. Modify existing machine learning algorithms to improve classification efficiency
52.		CP5161 Data Structures Laboratory	1. Design and implement basic and advanced data structures extensively.
			2. Design algorithms using graph structures
			3. Design and develop efficient algorithms with minimum complexity using design techniques.
53.		CP5201 Network Design and Technologies	1. Identify the components required for designing a network
			2. Design a network at a high-level using different networking technologies
			3. Analyze the various protocols of wireless and cellular networks
			4. Discuss the features of 4G and 5G networks
			5. Experiment with software defined networks
54.		CP5291 Security Practices	1. Understand the core fundamentals of system security
			2. Apply the security concepts related to networks in wired and wireless scenario
	3. Implement and Manage the security essentials in IT Sector		
	4. Able to explain the concepts of Cyber Security and encryption Concepts		

				5. Able to attain a through knowledge in the area of Privacy and Storage security and related Issues.
55.		Second	CP5292 Internet of Things	<ol style="list-style-type: none"> 1. Analyze various protocols for IoT 2. Develop web services to access/control IoT devices. 3. Design a portable IoT using Rasperry Pi 4. Deploy an IoT application and connect to the cloud. 5. Analyze applications of IoT in real time scenario
56.			CP5293 Big Data Analytics	<ol style="list-style-type: none"> 1. Understand how to leverage the insights from big data analytics 2. Analyze data by utilizing various statistical and data mining approaches 3. Perform analytics on real-time streaming data 4. Understand the various NoSql alternative database models
59.			CP5261 Data Analytics Laboratory	<ol style="list-style-type: none"> 1. Process big data using Hadoop framework 2. Build and apply linear and logistic regression models 3. Perform data analysis with machine learning methods 4. Perform graphical data analysis
61.			MA5160 Applied Probability and Statistics	<ol style="list-style-type: none"> 1. Basic probability axioms and rules and the moments of discrete and continuous random variables. 2. Consistency, efficiency and unbiasedness of estimators, method of maximum likelihood estimation and Central Limit Theorem. 3. Use statistical tests in testing hypotheses on data. 4. Perform exploratory analysis of multivariate data, such as multivariate normal density, calculating descriptive statistics, testing for multivariate normality.

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First	CP5151 Advanced Data Structures and Algorithms	1. Design data structures and algorithms to solve computing problems.
		2. Design algorithms using graph structure and various string matching algorithms to solve real-life problems.
		3. Apply suitable design strategy for problem solving
	CP5152 Advanced Computer Architecture	1. Identify the limitations of ILP.
		2. Discuss the issues related to multiprocessing and suggest solutions
		3. Point out the salient features of different multicore architectures and how they exploit parallelism.
		4. Discuss the various techniques used for optimising the cache performance
		5. Design hierarchal memory system
		6. Point out how data level parallelism is exploited in architectures
	CP5153 Operating System Internals	1. To explain the functionality of a large software system by reading its source.
		2. To revise any algorithm present in a system.
		3. To design a new algorithm to replace an existing one.
4. To appropriately modify and use the data structures of the linux kernel for a different software system.		
IF5101 Programming Paradigms	1. To explain the concepts of programming languages.	
	2. To compare the different programming paradigms.	
	3. To identify appropriate programming paradigm for designing large software systems.	

	M.TECH. INFORMATION TECHNOLOGY			4. To choose appropriately data types and control structures during the implementation of software systems.
66.		IF5191 Advanced Databases		1. To develop skills on databases to optimize their performance in practice. 2. To analyze each type of databases and its necessity. 3. To design faster algorithms in solving practical database problem.
67.		CP5161 Data Structures Laboratory		1. Design and implement basic and advanced data structures extensively. 2. Design algorithms using graph structures 3. Design and develop efficient algorithms with minimum complexity using design techniques.
68.		IF5161 Databases Laboratory		1. Design and Implement databases. 2. Formulate complex queries using SQL. 3. Design and Implement applications that have GUI and access databases for backend connectivity
69.		IF5251 Software Industrialization	Second	1. Understand SOA and DevOps 2. Understand the non-functional requirements in software engineering 3. Apply various performance analysis techniques 4. Analyze software systems for scalability 5. Apply capacity planning methods 6. Apply infrastructure management techniques
70.		IF5201 Network Engineering		1. Explain the of the principles of network engineering. 2. Knowledge of network engineering concepts and techniques. 3. Recent development in network engineering
71.		CP5292 Internet of Things		1. Analyze various protocols for IoT 2. Develop web services to access/control IoT devices. 3. Design a portable IoT using Raspberry Pi

				4. Deploy an IoT application and connect to the cloud.
				5. Analyze applications of IoT in real time scenario
72.			CP5293 Big Data Analytics	1. Understand how to leverage the insights from big data analytics
				2. Analyze data by utilizing various statistical and data mining approaches
				3. Perform analytics on real-time streaming data
				4. Understand the various NoSql alternative database models
76.			CP5261 Data Analytics Laboratory	1. Process big data using Hadoop framework.
				2. Build and apply linear and logistic regression models.
				3. Perform data analysis with machine learning methods.
				4. Perform graphical data analysis.