

COURSE OUTCOMES

REGULATION: 2013

S.NO	COURSE NAME	COURSE OUT COMES	
1	C101- Technical English – I (HS6151)	C101.1	Understand the basic grammatical functions and vocabulary.
		C101.2	Speak and write clearly and communicate using appropriate communicative strategies
		C101.3	Write Informal letters /blog/email with a wide range of vocabulary
		C101.4	listen/view and comprehend different spoken discourses and passages in different accents.
		C101.5	Read and write different genres of texts.
2	C102 - Mathematics – I (MA6151)	C102.1	Understand the Concepts of Diagonalization of matrices.
		C102.2	Apply simple techniques for testing the convergence of sequences and series
		C102.3	Use the differentiation concepts to differentiate functions
		C102.4	Apply partial differentiation in functions of several variables.
		C102.5	Apply integration concepts to compute multiple integrals.
3	C103 - Engineering Physics – I (PH6151)	C103.1	Able to classify various crystal structures and its parameters.
		C103.2	Explain the basics of properties of matter, the thermal properties of materials like thermal conductivity and its application.
		C103.3	Acquire knowledge on the concepts of quantum theory and its application in tunneling microscopes.
		C103.4	Understands the basic concepts of Acoustics in buildings and the production of ultrasonic waves and its application in NDT and medical field.
		C103.5	Understands the concept of photonics and its usage in the production of different types of laser and the principle of fibre optics with its application in various fields.
4	C104 - Engineering Chemistry-1 (CY6151)	C104.1	Understand the types of water and water treatment techniques.
		C104.2	Utilize the various adsorbent in industries.
		C104.3	Classify the types of alloys and understand the component present in the alloys.
		C104.4	Explain the types of fuels and manufacturing of secondary fuels.
		C104.5	Illustrate the types of energy resources.

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5	C105 - Computer programming (GE6151)	C105.1	Know the organization of digital Computer
		C105.2	Design C Programs for problems.
		C105.3	Write and execute C programs using Arrays and Strings for simple applications
		C105.4	Usage of Pointers and Function in C programming
		C105.5	Design Programming using Structures and Union
6	C106 - Engineering Graphics (GE6152)	C106.1	Discuss about conics and orthographic views of engineering components
		C106.2	Draw the projection of points, lines and planes
		C106.3	Classify solids and projection of solids at different positions
		C106.4	Show sectioned view of solids and development of surface
		C106.5	Draw isometric projection and perspective views of an object/solid
7	C107 - Computer Practices Laboratory (GE6161)	C107.1	Know about Data Manipulation in MS Office Packages
		C107.2	Apply good programming design methods for program development using Decision making and looping statements.
		C107.3	Design and implement C programs using strings and arrays.
		C107.4	Design and implement C programs using functions and string functions.
		C107.5	Develop recursive functions and develop programs using structures and unions.
8	C108 - Engineering Practices Laboratory (GE6162)	C108.1	Apply the knowledge of pipeline connections to household fittings and industrial buildings.
		C108.2	Prepare the different joints in roofs, doors, windows and furniture.
		C108.3	Perform step turning operation in a lathe.
		C108.4	Perform the various welding processes and know about its applications.
		C108.5	Produce a funnel using sheet metal.
9	C109 - Physics and Chemistry Laboratory - I (GE6163)	C109.1	Understand the concept of Laser and its diffraction for different usage
		C109.2	Able to find the velocity of ultrasonic waves in different liquid.
		C109.3	Apply principle of diffraction to determine the wavelength of visible spectrum.
		C109.4	Understand the various parameter affecting the thermal conductivity of poor conductor
		C109.5	Analyze the various modulus of elasticity of different types of materials.

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10	C110 - Technical English – II (HS6251)	C110.1	Understand basic grammar and know to engage in conversation.
		C110.2	Write and produce different types of technical write ups.
		C110.3	Read and write different genres of technical texts.
		C110.4	Create Job applications and Resume / E - Resume
		C110.5	Express opinions and initiate a discussion using appropriate communicative strategies
11	C111 - Mathematics – II (MA6251)	C111.1	Understand the concepts of Vector Calculus and their applications.
		C111.2	Interpret the Concepts of analytic functions and Conformal mapping.
		C111.3	Understand the integration concepts on Complex integration
		C111.4	Demonstrate the main concepts on Laplace transformations and their applications
		C111.5	Use various techniques in solving differential equations.
12	C112 - Engineering Physics – II (PH6251)	C112.1	Gain knowledge on the conducting materials and its properties
		C112.2	Acquire knowledge on the concepts of carrier concentration in intrinsic and extrinsic semiconductors and its determination using Hall effect.
		C112.3	Classify the different types of magnetic materials and know the properties of superconductors.
		C112.4	Understands the basic concepts of dielectric materials and its usage in capacitors and transformers.
		C112.5	Able to classify the different modern engineering materials and its application in different fields.
13	C113 - Engineering Chemistry – II (CY6251)	C113.1	Illustrate the types of electrochemical cell..
		C113.2	Summarize the types of corrosion and corrosion prevention methods.
		C113.3	Explain the types of fuels and manufacturing of secondary fuels.
		C113.4	Classify the types of alloys and understand the component present in the alloys.
		C113.5	Analyze the sample using various spectroscopy.
14	14 - Basic Electrical and electronics Engineering (GE6252)	C114.1	Applying the fundamentals of electric circuits and electrical measuring instruments
		C114.2	Understanding the concepts of electrical machines
		C114.3	Understand the concepts of various electronic devices
		C114.4	Understand the concepts of various Digital Electronics

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	C114.5	Acquire knowledge on basic concepts of Communication Engineering	
15	C115 - Engineering Mechanics (GE6253)	C115.1	Illustrate the vectorial and scalar representation of forces and moments.
		C115.2	Analyse the rigid body in equilibrium.
		C115.3	Evaluate the properties of surfaces and solids.
		C115.4	Calculate dynamic forces exerted in rigid body.
		C115.5	Determine the friction and the effects by the laws of friction.
16	C116 - Computer Aided Drafting and Modeling Laboratory (GE6261)	C116.1	Sketch simple figures with title block using AutoCAD software commands.
		C116.2	Sketch curves like parabola, spiral and involute of square & circle and draw the orthographic projection of simple solids.
		C116.3	Prepare orthographic projection of simple machine parts and draw a plan of residential building.
		C116.4	Sketch simple steel truss and sectional views of simple solids.
		C116.5	Prepare 2D multi view drawing from 3D model.
17	C117 - Physics and Chemistry Laboratory - II (GE6262)	C117.1	Analyze the various modulus of elasticity of different types of materials.
		C117.2	Understand the various parameters affecting the band gap of semiconductor.
		C117.3	Apply principle of diffraction to determine the parameters of optical prism.
		C117.4	Analyze the co-efficient of viscosity of different liquids.
		C117.5	Apply the basic principles of optics to determine the thickness of thin materials.
18	C201 - Transforms and Partial Differential Equations (MA6351)	C201.1	Demonstrate the effective mathematical tools used for Solving partial differential equations
		C201.2	Illustrate the Fourier series which is central to many applications in engineering.
		C201.3	Apply the applications of partial differential equations for boundary value problems using Fourier series analysis.
		C201.4	Acquire Fourier transform techniques used in wide variety of situations.
		C201.5	Explain Z transform techniques for discrete time systems and solve difference equations using Z transform.
	Materials (CE6306)	C202.1	Apply the knowledge of mathematics, basic theory of science, fundamental principles to attain the solution of complex engineering problems on deformation of materials.
		C202.2	Identify, formulate to perform the stress analysis of a beam under axial loading, torsion, transverse loading to provide valid conclusions.

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19	C202 - Strength of Mat	C202.3	Apply the Torsion formulation stresses and deformation in circular and hollows shafts to analyze complex engineering problems.
		C202.4	Illustrate the fundamental concepts of deflection of beam by various methods.
		C202.5	Apply reasoning informed by the contextual knowledge to perform stress and strain deformations in Thin , Thick Cylinders, spherical shells
20	C203 - Engineering Thermodynamics (ME6301)	C203.1	Enlighten the fundamentals in various thermodynamic systems, formulate, analyze problems pertaining to various thermal components, and developing solutions.
		C203.2	Provide in-depth knowledge about second law statements, evaluate solutions pertaining to availability and influence of entropy with environment.
		C203.3	Explain the properties of pure substances, solve complex power generation cycle problems and impart research knowledge in all thermodynamic cycles.
		C203.4	Ensuring formulation in various complex thermodynamics relations to understand the properties of Ideal gas and real gas
		C203.5	Enhancing the basics of psychrometry to design and develop research oriented solution.
21	C204 - Fluid Mechanics and Machinery (CE6451)	C204.1	Apply the mathematical knowledge and engineering fundamentals on the Characteristics of fluid flow and properties of fluids.
		C204.2	Identify the engineering problems and design system components of fluid flow through circular conduits.
		C204.3	Identify and formulate parameters of fluid flow by research based dimensional analysis.
		C204.4	Apply appropriate techniques and use the theoretical knowledge of the fluid flow in various pumps
		C204.5	Apply the fundamental knowledge of mathematics, science and engineering for the solution of complex engineering problems in turbines.
22	C205 - Manufacturing Technology - I (ME6302)	C205.1	Provide with the basic concepts of engineering fundamentals on various molding and casting processes, apply appropriate techniques by to obtain defect free casting.
		C205.2	Acquire the basic knowledge, engineering fundamentals of metal joining processes and identify the suitable welding techniques and apply them to the specific needs with safe environmental conditions in welding industries.
		C205.3	Explain the basic engineering fundamentals of various metal forming processes, equipments, design of forming dies and select the suitable forming techniques.
		C205.4	Identify the basic characteristics of sheet metals and its forming processes, apply appropriate techniques and resources to fabricate sheet metal components.
		C205.5	Illustrate the basics of plastics and apply suitable methods, resources, modern engineering tools in manufacture of plastic components
		C206.1	Understanding the heating and cooling curve and study the various classes of duty and Selection of power rating

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23	C206 - Electrical Drives Controls (EE6351)	C206.2	Understand the performance characteristics of various electric motors and its braking methods
		C206.3	Understand the Starting methods of DC & AC motors
		C206.4	Understand the Concepts of various speed control methods in DC motors
		C206.5	Understand the Concepts of various speed control methods in AC motors
24	C207 - Manufacturing Technology Laboratory - I (ME6311)	C207.1	Apply norms of the engineering practice to gain hands-on experience on lathe machine to perform Taper turning, External Thread cutting operations by using lathe machine.
		C207.2	Apply norms of the engineering practice to gain experience in lathe machine to perform Internal Boring & Internal Thread Cutting operations by using lathe machine.
		C207.3	Apply the engineering knowledge to turn safely and accurately an exercise to print specifications using many of the set-ups to perform Eccentric Turning, Knurling and parting operations associated with the lathe.
		C207.4	Apply knowledge, norms of the engineering practice and appropriate techniques to get hands on experience on Shaping machine.
		C207.5	Apply norms of the engineering practice to gain hands-on experience on machining of materials using milling machine.
25	C208 - Fluid Mechanics and Machinery Laboratory (CE6461)	C208.1	Apply the mathematical knowledge and engineering fundamentals on the Characteristics of fluid flow and properties of fluids
		C208.2	Identify the engineering problems and use the practical knowledge on finding the characteristics of fluid flow in various pumps
		C208.3	Identify the solutions for turbine related problems and to meet the specified needs with appropriate consideration for fluid flow in turbines.
26	C209 - Electrical Engineering Laboratory (EE6365)	C209.1	Understanding the heating and cooling curve and study the various classes of duty and Selection of power rating
		C209.2	Understand the performance characteristics of various electric motors and its braking methods
		C209.3	Understand the Starting methods of DC & AC motors
		C209.4	Understand the Concepts of various speed control methods in DC motors
		C209.5	Understand the Concepts of various speed control methods in AC motors
27	C210 - Statistics and Numerical Methods (MA6452)	C210.1	Apply the concept of testing of hypothesis for small and large samples in real life problems
		C210.2	Illustrate the complex engineering problems by using the modern tools in Design of Experiments
		C210.3	Understand the basic concepts and numerical techniques for solving algebraic and transcendental equations
		C210.4	Interpret the various types of interpolation, numerical differentiation and integration models.

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	C	C210.5	Utilize the numerical techniques for solving initial value problems.
28	C211 - Kinematics of Machinery (ME6401)	C211.1	Explain the engineering knowledge on the basic components and layout of linkages in the assembly of a machine, so as to identify and select suitable linkages as well as mechanisms for various engineering applications.
		C211.2	Explain the assembly with respect to the displacement, velocity, and acceleration at any point in a link of a mechanism.
		C211.3	Illustrate the motion resulting from a specified set of linkages, design few linkage mechanisms and CAM mechanisms for specified output motions.
		C211.4	Illustrate the basic concepts of toothed gearing and kinematics of gear trains and the effects of friction in motion transmission and in machine components.
		C211.5	Demonstrate the principles of friction in machine elements. Examine the concept of vibratory systems and their analysis in the domain of forced vibration.
29	C212 - Manufacturing Technology– II (ME6402)	C212.1	Acquire the basic machining concepts on the mechanics of chip formation in single point cutting tool.
		C212.2	Apply the knowledge gained in the working standards of turning machines for manufacture of products to serve the society.
		C212.3	Impart the ideas gained in shaping, milling and gear cutting machines to make finished products to satisfy the ethics of engineering norms.
		C212.4	Acquire the fundamentals involved in the abrasive and broaching processes along with the specifications with types, selection.
		C212.5	Demonstrate the simple CNC code, both manually and using a simple CAD/CAM system and use it to produce several components while working in groups.
30	C213 - Engineering Materials and Metallurgy (ME6403)	C213.1	Apply the knowledge of mathematics, science, and engineering fundamentals of alloys and Phase diagram of various materials and the classification of micro structure in steel and cast iron.
		C213.2	Acquire the knowledge of engineering fundamentals for heat treatment process. Identify, formulate, analysis and apply appropriate techniques used in all the heat treatment process with an understanding of its limitations.
		C213.3	Illustrate the engineering knowledge of ferrous and non-ferrous metal and its alloys. Identify, formulate the appropriate techniques and engineering application of ferrous and non-ferrous metal and alloys.
		C213.4	Illustrate the engineering knowledge of polymers, ceramics and composites. Identify, formulate the appropriate techniques and engineering application of polymers, ceramics and composites.
		C213.5	Illustrate the engineering knowledge of mechanical properties and its deformation mechanisms.
31	Environmental Science Engineering (GE6351)	C214.1	Understand the types, characteristics of Ecosystem & Biodiversity.
		C214.2	Explain the types of pollution & its causes.
		C214.3	Explain the importance of Natural Resources.

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	C214 - Environment and Engine	C214.4	Understand the Environmental problems.
		C214.5	Explain the importance of women, child education and HIV /AIDS.
32	C215 - Thermal Engineering (ME6404)	C215.1	Apply the knowledge of mathematics, science, basic thermodynamic concepts in various gas power cycles, Identify design and analyzing the characteristic of power cycles and augmenting the performance concerned to research orientation.
		C215.2	Provide the knowledge about IC engines, analyzing, developing suitable research techniques and experimentation favoring benign environment.
		C215.3	Examining the friction losses in steam nozzles and capable of designing appropriate turbine as per the technological change.
		C215.4	Profound in the fundamentals, parametrically analyze the various types of air compressors and design pertaining to industry requirements.
		C215.5	Demonstrate the various refrigeration and Air condition cycles suited to working environmental conditions and ability to solve complex issues associated to modern techniques.
33	C216 - Manufacturing Technology Laboratory-II (ME6411)	C216.1	Apply engineering knowledge, hands on experience to manufacture engineering components like Contour milling using vertical milling machine
		C216.2	Apply the engineering norms to produce engineering comonents like Spur, Helical Gear by using milling machine
		C216.3	Apply knowledge, norms of the engineering practice and appropriate techniques to get hands on experience on grinding machine.
		C216.4	Illustrate the importance of Measurement of cutting forces in Milling / Turning Process
		C216.5	Apply norms of the engineering practice to gain hands-on experience in CNC Part Programming and Machining
34	C217 - Thermal Engineering Laboratory - I (ME6412)	C217.1	Apply the knowledge of engineering fundamentals to understand the complete operation of 2 stroke and 4 stroke IC Engines & investigate the characteristics of valve & port timing diagrams.
		C217.2	Identify, formulate & analyze the engine performance based on specific fuel consumption and familiarize to interpret the uncounted losses in IC engines.
		C217.3	Illustarte the fundamental of IC engines, ensure to determine the problems encountered due to friction and recommending the valid suggestions to reduce it.
		C217.4	Formulate the kinematic viscosity of fuels and its variation with temperature & able to determine flash and fire point of the fuels.
		C217.5	Apply engineering concepts of steam generators and turbine to analyze, interpret data in assessing performance with energy balance of steam generators and turbines.
	of Materials (CE6315)	C218.1	Apply the knowledge of mathematics, science, engineering fundamentals to conduct tention test, Torsion test experiments, to find strength of different materials.
		C218.2	Identify the properties of engineering materials and harness of different materials

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35	C218 - Strength Laboratory	C218.3	Applying the norms of the engineering practice, under Compression test on helical springs
		C218.4	Identify the engineering properties in tempering process and indentify the improvements in Mechanical properties.
36	C301 - Computer Aided Design (ME6501)	C301.1	Apply the Knowledge of mathematics and engineering fundamentals to formulate the necessary appropriate techniques to understand the design process and fundamentals of Computer Graphics.
		C301.2	Demaonstrate the system components to Create curves and different geometric modeling representaion.
		C301.3	Identify the problem in complex engineering design to Improve the visualization ability before their actual fabrication.
		C301.4	Generate and interpret engineering technical part drawings and Assembly Approach methods according to engineering design standards.
		C301.5	Apply engineering fundamental knowledge in design to Communicate effectively on complex engineering activities to transfer the graphical data.
37	C302 - Heat and Mass Transfer (ME6502)	C302.1	Apply the engineering knowledge on heat conduction in analyzing, formulating with the obtained data and designing various complex conditions of thermal components.
		C302.2	Evaluate and investigate practically, heat transfer through mode of convection at complex conditions.
		C302.3	Identify, analyze and interpret data for designing heat exchangers associated with real cases considering environmental issues.
		C302.4	Compute the shape factor in evaluating solution for heat radiation and applying the knowledge for designing the solar energy utilization needed for sustainable development.
		C302.5	Calculate and analyze the rate of mass transfer in complex engineering problems related to research issues.
38	C303- Design of Machine Elements (ME6503)	C303.1	Evaluate the Engineering problems using the principles of Engineering science for understanding the design process and select the appropriate materials based on mechanical properties considering safety and environmental conditions.
		C303.2	Demonstrate the design knowledge on solid and hollow components, Shafts and rigid and flexible couplings.
		C303.3	Provide an engineering knowledge on the specific engineering area in temporary and permanent joint
		C303.4	Apply Engineering design knowledge on Energy Storing Elements and Engine Components
		C303.5	Evaluate Engineering knowledge and analyze complex problems associated with the design so as to develop a component of bearing in machines
	d Measurements (34)	C304.1	Apply engineering knowledge, standard and necessary appropriate techniques used in measuring instruments for the specific requirements like sensitivity, accuracy and precision, etc.
		C304.2	Illustrate and understanding the engineering application of different measuring instruments for linear, angular, form and roughness measurements.

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39	C304 - Metrology and (ME650)	C304.3	Identify the advanced measuring instruments and concepts of Machine Vision System elements and Applications.
		C304.4	Apply modern engineering techniques and software's in the measurement of linear, angular and form using in Laser Interferometer and CMM.
		C304.5	Explain engineering knowledge on different measuring equipments for the measurement of Power, Flow and Temperature.
40	C305 - Dynamics of Machines (ME6505)	C305.1	Identify, evaluate & apply the available static force analysis and dynamic force analysis of dynamics mechanisms.
		C305.2	Explain, formulate & calculate the Static and dynamic balancing in multi-cylinder inline, V-engines
		C305.3	Interpret, Analyse & synthesis, the concept of vibratory systems in the domain of free vibration.
		C305.4	Examine, create & analyse the concept of vibratory systems in the domain of forced vibration .
		C305.5	Comprehend and apply the principles of governors & gyroscopes and their applications .
41	C306 - Professional Ethics in Engineering (GE6075)	C306.1	Impart Knowledge of ethics in society, discuss the ethical issues related to engineering and realize the responsibilities, human values and rights in the society.
		C306.2	Core understanding of Engineering ethics, different circumstances in moral issues as well as various models of professional roles.
		C306.3	Familiarize to correlate engineering as social experimentation, discussion of code of ethics related to engineering and a better balanced outlook on law.
		C306.4	Familiarize safety and risk, responsibilities and rights pertaining to professional, employee and intellectual property rights (IPR), discussion about occupational crime and discrimination.
		C306.5	Assessment of Global issues, understanding of MNCs, role of engineers in different expertise, discussion of code of conduct in Engineering as well as weapon development.
42	C307 - Dynamics Laboratory (ME6511)	C307.1	Evaluate and determine the velocity ratios of gear trains applicable in various form of complex dynamics engineering applications
		C307.2	Determine the static and dynamic values of various types of vibration systems with appropriate consideration for safety and environmental considerations.
		C307.3	calculate and determine the gyroscopic effect by means of system analysis and interpretation of data and synthesis of the parameters to provide valid design conclusions
		C307.4	Construct, conduct and determine parameter values of various types of governors in tune with social responsibility to avoid over speed and fuel economy resulting in the green tribunal considerations
		C307.5	Evaluate, design and generate cam profiles and related standards of any cam system applicable in standard automation for safety measurements.
	ME6512)	C308.1	Apply the knowledge of engineering fundamentals, advanced topics pertaining to the modes of heat transfer mechanism through conduction, convection and radiation in various mediums.

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43	C308 - Thermal Engineering Laboratory-II	C308.2	Identify, formulate and analyze complex engineering problems by heat conduction charts in solving two dimensional and three-dimensional heat conduction problems
		C308.3	Explain and analyze heat exchanger performance by using the method of log mean temperature difference, method of heat exchanger effectiveness and apply principles of heat transfer to develop mathematical models for uniform and non-uniform fins.
		C308.4	Evaluate the radiative heat exchange between surfaces and in diffuse, understand the mechanisms involved in radiation heat transfer, evaluate various law of radiation and radiation exchange between two mediums.
		C308.5	provide on oppournity the refrigeration cycles, methods for improving performance and design an air conditioning system using cooling loads by applying the knowledge of engineering fundamentals to understand vapour compression, absorption refrigeration system and components of refrigeration systems.
44	C309 - Metrology and Measurements Laboratory (ME6513)	C309.1	Apply the knowledge of mathematics, science and engineering fundamentals to obtain the measurement from measuring instruments like sine bar, vernier height gauge and gear tooth vernier.
		C309.2	Evaluate and interpretation of data, and synthesis of the information to provide by the measuring instrument to be compare with the standard information and give the valid conclusions like electrical comparators and mechanical comparator etc..
		C309.3	Understand the design system components or process of the measuring instrument to measure the specific needs in engineering products like straightness, flatness by using auto collimator.
		C309.4	Create, select, and apply appropriate techniques, resources, to measure the Bore diameter of the product by the application of modern engineering with IT tools.
		C309.5	Identify the design system components or processof the measuring instrument to measure the power, flow and Temperature.
45	C310 - Design of Transmission Systems (ME6601)	C310.1	Develop knowledge of mathematics, engineering fundamentals, and governing equations of flexible drives, identify, formulate, solve engineering problems and design drives to meet desired needs within realistic constraints for sustainable development..
		C310.2	Utilyze knowledge of mathematics, engineering fundamentals, and governing equations of spur, parellel axix helical gears as per the requirements within realistic constraints.
		C310.3	Develop knowledge of mathematics, engineering fundamentals, and governing equations of Bevel, worm, cross helical gears as per the requirements within realistic constraints.
		C310.4	Apply knowledge of mathematics, engineering fundamentals, governing equations of gear box, and identify, formulate and solve engineering problems by designing appropriate components within the safe limits.
		C310.5	Analyze knowledge of mathematics, fundamental equations and solve engineering problems in drives such as CAM, Clutches and Brakes.
	Management (MG6851)	C311.1	Identify the concepts of organization, management and the role of managers. Then the global management and ethical responsibilities of the engineer to the organization and society.
		C311.2	intrepert the knowledge of planning processes, types of plans, strategies, policies and decision making processes. And how to function effectively as a individual and team work with management principles in ethical manner.

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46	C311 - Principles of Management	C311.3	Justify the knowledge of organizing, organization structure and the importance of team work in groups, departmentation, staffing, selection and recruitment, understanding of the engineering and management principles.
		C311.4	Apply the knowledge of directing, motivation, leadership, communication in the management of the organization. And they will understand the responsibilities of the individual and team work to manage the organization culture with ethical principles.
		C311.5	Know about the controlling, types of control and how to manage projects in multidisciplinary environment through proper communication. Then the life-long learning of the management skills in the broadest context of technological change.
47	C312 - Automobile Engineering (ME6602)	C312.1	Apply basic science and engineering fundamental knowledge for identify and recognize the vehicle structure and engines to sustainable transportation for society in different condition.
		C312.2	Identify and understand the processes that meet the specified needs with appropriate consideration for engine auxiliary system with different circumference of practical.
		C312.3	Identify and select the power transmission processes of automobile that meet the specified needs with appropriate consideration through different manner for practical cases of transportation.
		C312.4	Develop the knowledge on steering; brakes and suspension systems for improve the design in automobiles.
		C312.5	Illustrate the awareness of alternative energy sources on automobiles for public health and environmental need for sustainable development.
48	C313 - Finite Element Analysis (ME6603)	C313.1	Apply knowledge of mathematics, science and engineering fundamentals to analyse Boundary value engineering problems by finite element Method
		C313.2	Identify, formulate and Analyze in one dimensional engineering problems by finite element analyses.
		C313.3	Identify, formulate and Analyze in two dimensional scalar variable engineering problems by finite element analyses.
		C313.4	Analysis of Complex two dimensional vector variable problems and interpretation of data using finite element method.
		C313.5	Explain experiments, Analyse and interpretation of data in Isoparametric formulation of heat transfer and fluid mechanics by finite element Method.
49	Gas Dynamics and Jet Propulsion (ME6604)	C314.1	Apply the knowledge of engineering in understanding about Steady One Dimensional Isentropic compressible fluid flow, fixing the design parameters of nozzles and diffusers to the solution of complex engineering problems.
		C314.2	Develop the complex engineering problems and design system components by using of Rayleigh flow and Fanno Flow concepts in the real system.
		C314.3	Identify the abnormalities in variation of flow parameters across the normal and Oblique Shocks and analyze complex engineering problems reaching substantiated conclusions through calculations and understanding the implications of shocks in a real system.
		C314.4	Apply appropriate techniques, resources and modern engineering tools for the functions of air craft along with the fundamental concepts and considering design solutions to assess societal, health and safety for the sustainable development.

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	C314 -	C314.5	Utilize the knowledge and research methods about the fundamentals, principles and operation of rocket, types of various propellants and synthesis of the information to provide valid conclusions for the sustainable development.
50	C315 - Unconventional Machining Processes (ME6004)	C315.1	Apply the knowledge of engineering science and identify the processes suitable for machining of hard materials.
		C315.2	Explain the principle, Mechanism of metal removal of various Mechanical Energy Based unconventional machining processes.
		C315.3	Identify and evaluate the various process parameters, Material removal rate (MRR) and their effect on the component machined on Electrical Energy Based unconventional machining processes.
		C315.4	Illustrate the principle, Mechanism of metal removal of Chemical and Electro-Chemical Energy Based unconventional machining processes.
		C315.5	Compare the latest advanced engineering applications of various Thermal Energy Based un conventional machining processes.
51	C316 - C.A.D. / C.A.M. Laboratory (ME6611)	C316.1	Apply the knowledge of engineering fundamentals to Understand the role of design and analysis in mechanical engineering Components.
		C316.2	Design appropriate techniques, resources use to Create Mechanical Components 3D modeling by modern engineering software tools.
		C316.3	Design and Development of mechanical part drawing and Assembly of components implemented in real time applications.
		C316.4	Design and Create Mechanical Components & Simulation of process using CAM Software with G and M codes.
		C316.5	Develop Appropriate techniques to create Manufacturing of Mechanical components using modern CNC Lathe and Milling Machines.
52	C317 - Communication Skills - Laboratory Based (ME6612)	C317.1	Creat to train and fabricating design models with the implementation of their knowledge, identification of problems associated to the components and development of solution to the problems identified.
		C317.2	Solve the skills gained during the course resulting solution to the complex problems and experiment it to provide conclusions.
		C317.3	Adopr to provide design solutions from the problems identified pertaining to engineering sciences.
		C317.4	Inspire knowledge and ability to work as a team in presenting, designing and documenting their innovations.
		C317.5	Design and search knowledge, ethical principles and responsibilities with the fabrication required by the changes in technology.
53	- Design and Fabrication Project (GE6563)	C318.1	Develop communicative competence.
		C318.2	Show the soft skills to answer questions in the interviews.
		C318.3	Develop employability skills to enhance their prospect of placements.
		C318.4	Take international examination such as IELTS and TOEFL.

S.NO	COURSE NAME	COURSE OUT COMES	
	C318	C318.5	Make presentations and participate in group discussions.
54	C401 - Power Plant Engineering (ME6701)	C401.1	Explain the working principle of various coal based power plants and boilers.
		C401.2	Describe the working principle of Diesel and gas turbine cycle power plants and Combined Cycle Power Plants
		C401.3	Demonstrate the working principles of various Nuclear reactors and nuclear waste Management, Safety measures for Nuclear Power plants
		C401.4	Expound the Renewable Energy based electrical power plant
		C401.5	Interpret the knowledge on Energy, Economic and Environmental Issues of Power Plants
55	C402 - Mechatronics (ME6702)	C402.1	Demonstrate the Engineering Knowledge of engineering science to formulate the necessary appropriate techniques used in mechatronics, sensor and transducer for solve the problems
		C402.2	Differentiate the system components to integrate microprocessor 8085 and microcontroller 8051 to design experiments to evaluate system performance with respect to specifications.
		C402.3	Formulate and explain the Programmable Peripheral Interface operations to the micro controllers to generate the system.
		C402.4	Expound the Programmable Logic Controller operations to the micro controllers to generate the system.
		C402.5	Illustrate engineering knowledge on design, development of actuators and sensors all are integrated with embedded control to provide valid solutions.
56	C403 - Computer Integrated Manufacturing Systems (ME6703)	C403.1	Define the design features of CAD and Concurrent Engineering, CIM concepts, JIT and Lean manufacturing
		C403.2	Compare the knowledge in fundamentals of manual and computer aided process Planning, Manufacturing Resource Planning-II (MRP-II) & Enterprise Resource Planning (ERP)
		C403.3	Develop skill of using group technology and various approaches of computer aided process planning.
		C403.4	Design the AGV and organize the flexible manufacturing system in a factory.
		C403.5	Inspect the Industrial Robot Control systems and Part Programming in Robot Accuracy and Repeatability
57	C404 - Total Quality management (GE6757)	C404.1	Outline the dimensions and barriers regarding with quality
		C404.2	Illustrate the TQM principles and quality strategies
		C404.3	Demonstrate tools utilization for quality improvement and quality system
		C404.4	Illustrate the various quality concepts and techniques used to measure quality

S.NO	COURSE NAME	COURSE OUT COMES	
	C M	C404.5	Apply various quality system and auditing on implementation of TQM
58	C405 - Design of Jigs, Fixtures and Press Tools (ME6006)	C405.1	Students will be able to understand the importance of tool design and procedure in locating and clamping principal for productive manufacturing.
		C405.2	Students will be able to understand different jigs and fixtures design
		C405.3	Students will be able to understand different press and cutting dies in machining processes.
		C405.4	Students will be able to understand different bending and drawing dies and design
		C405.5	Students will be able to understand different forming dies and design and to get knowledge in latest areavof tooling for CNC Machine
59	C406 - Robotics (ME6010)	C406.1	Describe the fundamental concept of Robot Anatomy, Co-ordinate Systems, Work envelope types of Robots
		C406.2	Classify the Robot Drive and Design Considerations of Robot Drive Systems, End Effectors and types of Grippers
		C406.3	Differentiate various robot sensors, vision systems and their perception principles that enable a root to analyze their environment, reason and take appropriate actions toward the given goal.
		C406.4	Identify and able to solve problems in Robot kinematics and Robot programming Languages
		C406.5	Impart the Safety Considerations for Robot Operations, and implementation of Robots in Industries
60	C407 - Simulation and Analysis Laboratory (ME6711)	C407.1	Apply Knowledge of Mathematics and Engineering Fundamentals to Evaluate & analyze the Engineering components and structures by using Analysis Software.
		C407.2	Use appropriate techniques and using the Mathematical Knowledge, Engineering Fundamentals to the engineering problem and to estimate frequency and harmonic analysis of 2D components by using Analysis Software.
		C407.3	Analysis of conductive and convective heat transfer of 2D components with appropriate modern Engineering techniques and Analysis Software.
		C407.4	Create, Select and Use appropriate techniques and Engineering Fundamentals in the Complex Engineering Problem to Analyse different Beam Problems.
		C407.5	Utilize the theoretical Engineering knowledge of FEA to the practical real time applications.
	oratory (ME6712)	C408.1	Apply engineering fundamentals knowledge on working principle double acting actuation system & rotary actuation system using hydraulic kit
		C408.2	Apply engineering fundamentals knowledge on working principle of single and double acting actuation system using pneumatic kit with Programming Logic Controller.

S.NO	COURSE NAME	COURSE OUT COMES	
61	C408 - Mechatronics Lab	C408.3	Identify, formulate and analyze the flow, pressure and temperature process using Multiprocessor trainer kit
		C408.4	Select and apply appropriate techniques to evaluate speed control and position control of stepper motors
		C408.5	Modelling of basic electrical, hydraulic and pneumatic systems to analysis the engineering problem using LAB VIEW software.
62	C409 - Comprehension (ME6713)	C409.1	Provide opportunity to apply the knowledge of mathematics, science, engineering fundamentals gained during the course and able to solve any complex kind real life problems throughout his / her career.
		C409.2	Create ability to improve methodology for the development of designs in utilizing modern tools with authenticated results.
		C409.3	Achieve an understanding with the fundamentals of existing engineering systems including principles of mathematics, natural science, and engineering sciences as life-long basis.
		C409.4	Ensure the confidence to work as an individual and with team to solve and provide authenticated results for variety of problems given to them.
		C409.5	Measure the technological changes intellectually providing substantiated conclusions.
63	C410 - Engineering Economics (MG6863)	C410.1	Explain the Concept of Engineering Economics and Elementary economic Analysis for a product, Process planning.
		C410.2	Demonstrate the value engineering procedure and formulae the effective interest rate
		C410.3	Evaluate the Revenue dominated cash flow model and Cost dominated cash flow model
		C410.4	Differentiate the replacement methods and select the type of Maintenance analysis
		C410.5	Choose the Depreciation techniques and comparison of alternatives and determination of economic life of asset
64	C411- Entrepreneurship Development (MG6071)	C411.1	Expound the types of Entrepreneurship and economic Growth
		C411.2	Importance of motivation and training on the Entrepreneurship Development
		C411.3	Selecting a Good Business opportunity and market survey research
		C411.4	Explain the term Loan, importance of taxation
		C411.5	Formulate the business Incubators – Government Policy for Small Scale Enterprises
	(ME6016)	C412.1	Explain Engineering science and natural science for understanding the phenomena of carburetion, combustion process in Spark Ignited engines and the factors affecting the combustion process.
		C412.2	Illustrate Engineering science and natural science for understanding the combustion process in compression ignited engines, the factors affecting the combustion process, types of injection and combustion chambers and turbo charging.

S.NO	COURSE NAME	COURSE OUT COMES	
65	C412 - Advanced I.C. Engines	C412.3	Familiarise with Engineering science and natural science for understanding the emission forming mechanism in engines, methods for controlling emissions, emission measuring devices, emission norms and Indian driving cycles, in turn providing a thorough Engineering knowledge towards the impact on health, safety and environmental front.
		C412.4	Differentiate the properties of various alternate fuels by using the principles of Engineering science and natural science for studying their performance, combustion and emission characteristics; also identify and analyse the need for engine modifications and the requirements of alternate fuels in creating a sustainable solution for better society and health environmental conditions.
		C412.5	Utilisation of Engineering science for understanding the technological change / trends in engine and engine management system for better combustion and lesser emission.
66	C413 - Project Work (ME6811)	C413.1	Apply the knowledge of Engineering fundamentals, mathematics and an engineering specialization, thereby formulating research work and analyse complex engineering problems.
		C413.2	Familiarize with designing solutions for complex engineering problems and design system components, thereby formulating research based knowledge for the design of project work.
		C413.3	Impart appropriate techniques, resource and modern engineering and modeling to engineering design problems with an understanding of the limitations.
		C413.4	Applying Engineering ethics principles and to commit the responsibilities and norms of engineering practice, at the same time functioning effectively as a individual and holding good team work.
		C413.5	Recognize the need for the preparation and the ability to engage in independent and life-long learning process, thereby also promoting to communicate effectively on complex engineering activities and being able to design and write effective documentation.