Semester – 1 (ME1I)		
Course	**CO's**	**Course Outcomes**
(22101) English *C101*	C101.1	Formulate grammatically correct sentences.
	C101.2	Summarize comprehensive passages.
	C101.3	Composes dialogues & paragraphs for different situations.
	C101.4	Use relevant words as per contexts.
	C101.5	Deliver; prepare speeches to express ideas, thoughts, and emotions.
(22102) Basic Science *(PHY & CHY)* *C102*	C102.1	Estimate error in the measurement of physical quantities.
	C102.2	Apply the principle of electricity and magnetism to solve Engg. problems
	C102.3	Use the basic principles of heat & optics in related Engg. Applications.
	C102.4	Apply the catalysis process in industries.
	C102.5	Use corrosion prevention measures in industries.
	C102.6	Use relevant Engg. Materials in industries.
(22103) Basic Mathematics *C103*	C103.1	Apply the concept of algebra to solve Engg. related problems
	C103.2	Utilize basic concepts of trigonometry to solve elementary Engg. Problems.
	C103.3	Solve basic Engg. Problems under given conditions of straight lines.
	C103.4	Solve the problems based on measurement of regular closed figures & regular solids.
	C103.5	Use basic concepts of statistics to solve Engg. related problems
(22001) Fundamentals of ICT *C104*	C104.1	Use computer systems & its peripherals.
	C104.2	Prepare business documents using word processing tools.
	C104.3	Interpret data & represents it graphically using spread sheets.
	C104.4	Prepare professional presentations
	C104.5	Use different types of web browsers.
(22002) Engineering Graphics *C105*	C105.1	Draw geometric figures & engineering curves.
	C105.2	Draw a view of given object using principles of orthographic projection.
	C105.3	Draw isometric view of given components or from orthographic projection.
	C105.4	Use drawing codes conventions & symbols as per IS SP/46 in Engg. Drawing.
	C105.5	Draw free hand sketches of given engineering components.
(22004) Workshop Practice *C106*	C106.1	Select tools & machineries according to jobs.
	C106.2	Sue hand tools in different shops for performing different operations.
	C106.3	Operate equipment & machinery in different shops.
	C106.4	Prepare job according to drawing.
	C106.5	Maintain workshop related tools equipments & machinery.

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Course	CO's	Course Outcomes
(22202) Applied Science *(PHY & CHY)* *C107*	C107.1	Select relevant materials in industry by analyzing its physical properties.
	C107.2	Apply law of motion in various applications.
	C107.3	Use LASER's X Rays & Photoelectric sensors.
	C107.4	Select relevant metallurgical process related to industrial applications.
	C107.5	Use relevant water treatment process to solve industrial problems.
	C107.6	Use relevant fuel in relevant applications.
(22203) Applied Mechanics *C108*	C108.1	Identify the force system for given conditions by applying the basics of Mechanics.
	C108.2	Select the relevant simple lifting machines for given purposes.
	C108.3	Determine unknown forces of different engineering systems.
	C108.4	Check the stability of various force system.
	C108.5	Apply the principles of friction in various conditions for useful purposes.
	C108.6	Find the centroid & center of gravity of various components in engineering system.
(22206) **Applied Mathematics** **C109**	C109.1	Calculate the equation of tangent, maxima, minima, radius of curvature by differentiation.
	C109.2	Solve the given problem(s) of integration using suitable methods.
	C109.3	Apply the concept of integration to find area and volume.
	C109.4	Solve the differential equation of first order and first degree using suitable methods.
	C109.5	Utilize basic concepts of probability distribution to solve elementary engineering problems.
(22207) Engineering Drawing *C110*	C110.1	Draw projections of 2D & 3D standards regular entities.
	C110.2	Draw sectional view of objects.
	C110.3	Draw orthographic Sectional & missing views.
	C110.4	Draw auxiliary vies of objects.
	C110.5	Use various drawing codes conventions & symbols as per IS SP/46.
	C110.6	Draw free hand sketches of given engineering elements.
(22009) Business Communication Using Computers	C111.1	Communicate effectively by avoiding barriers in various formal & informal situations.
	C111.2	Communicate skillfully using non verbal method of communication.
	C111.3	Give presentation by using Audio-Visual aids.
	C111.4	Write report using correct guidelines.

Semester – 2 (ME2I)

C111	**C111.5**	Compose emails and formal business letters.
(22010) Mechanical Engineering Workshop *C112*	**C112.1**	Select tool & machinery according to jobs.
	C112.2	Use hand tools in different shops for performing different operations.
	C112.3	Operate equipments & machines in various shops.
	C112.4	Prepare composite/utility jobs according to drawing.
	C112.5	Maintain workshop related tools, instruments & machines.

Semester – 3 (ME3I)		
(22306) Strength of Materials *C201*	**C201.1**	Compute moment of inertia symmetric & unsymmetrical sections.
	C201.2	Estimate simple stresses in machine components.
	C201.3	Perform stress to evaluate mechanical properties according to Indian Standards.
	C201.4	Compute shear force & bending moment and corresponding shear & bending stresses in beams subject to point & uniformly distributed load.
	C201.5	Estimate stresses in shafts under twisting moment.
	C201.6	Estimate stresses in short member subjected to eccentric loading.
(22310) Basic Electrical & Electronics Engineering *C202*	**C202.1**	Use principles of electric & magnetic circuits to solve Engg. Problems.
	C202.2	Determine voltage & current in AC circuits.
	C202.3	Connect transformers & electric motors for specific requirements.
	C202.4	Identify electronic components in electric circuits.
	C202.5	Use relevant electronic components safely.
	C202.6	Use relevant electric/electronic protective devices safely.
(22337) Thermal Engineering *C203*	**C203.1**	Apply law of thermodynamics to devices based on thermodynamics.
	C203.2	Use first law of thermodynamics for ideal gases in closed systems.
	C203.3	Use relevant steam boilers
	C203.4	Use relevant steam nozzles & turbines.
	C203.5	Use relevant steam condensers
	C203.6	Use suitable modes of heat transfer.
(22341) Mechanical Working Drawing *C204*	**C204.1**	Draw development of lateral surface of various Solids.
	C204.2	Draw intersection curves of different solids.
	C204.3	Use various drawing codes conventions & symbols as per IS SP/46.
	C204.4	Draw production drawings use to produce products.
	C204.5	Draw assembly & details drawings of products.
(22342) Engineering Metrology *C205*	**C205.1**	Select the relevant instruments for measurements.
	C205.2	Use different types of comparators
	C205.3	Select gauges, fits 7 tolerances for machine components.
	C205.4	Use relevant instruments to measure different parameters of screw threads & gears.
	C205.5	Use linear & angular measuring instruments.
	C205.6	Select relevant surface testing method.
(22343) Mechanical	**C206.1**	Identify properties of material.
	C206.2	Select relevant ferrous materials for mechanical components.

Engineering Materials *C206*	C206.3	Select relevant cast iron for the engineering applications.
	C206.4	Use non ferrous metals for mechanical components
	C206.5	Suggest relevant advance material for mechanical components.
	C206.6	Select relevant heat treatment process.

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Semester –Semester – 4 (ME4I)		
(22438) Theory of Machines *C207*	**C207.1**	Identify various links in popular mechanisms.
	C207.2	Select suitable mechanism for various applications.
	C207.3	Interpret the motion of cam & follower.
	C207.4	Recommend relevant belt, chain & drives for different applications.
	C207.5	Choose relevant brakes 7 clutches for various applications.
	C207.6	Select suitable flywheel & governors for various applications.
(22443) Mechanical Engineering Measurement *C208*	**C208.1**	Use relevant instruments for measuring displacement.
	C208.2	Use relevant instruments for measuring force & torque.
	C208.3	Use relevant pressure & temp. Measuring instruments.
	C208.4	Use relevant instruments for measurement of flow.
	C208.5	Select relevant instrument for measurement of vibration & strain.
	C208.6	Select relevant instrument for speed & sound measurement.
(22445) Fluid Mechanics & Machinery *C209*	**C209.1**	Use manometer &Bourden gauge to measure pressure.
	C209.2	Use flow meter to measure the rate of flow.
	C209.3	Maintain flow through pipes.
	C209.4	Maintain the jet impact on various types of vanes for optimum efficiency.
	C209.5	Maintain hydraulic turbine
	C209.6	Maintain Hydraulic Pumps.
(22446) Manufacturing Processes *C210*	**C210.1**	Produce jobs using lathe & drilling machines.
	C210.2	Produce jobs using shaping & slotting operations.
	C210.3	Prepare product using different casting processes.
	C210.4	Prepare product using different forming processes.
	C210.5	Use joining processes to produce jobs.
(22447) Environmental Studies *C211*	**C211.1**	Develop public awareness about environment.
	C211.2	Select alternative energy resources for engineering practice.
	C211.3	Conserve eco system and biodiversity.
	C211.4	Apply techniques to reduce environmental pollution.
	C211.5	Manage social issue and environmental ethics as life long learning.
(22042) Computer Aided Drafting *C212*	**C212.1**	Use file management technique in a CAD Software.
	C212.2	Draw complex 2D geometric figures using a CAD Software.
	C212.3	Modify 2D complex geometric figures using a CAD Software.
	C212.4	Use software 2D & write text on existing 2D geometric entities.
	C212.5	Use Software to plot existing drawing with desired plot parameters.

	C212.6	Create isometric drawing using a CAD Software.
	C212.7	Use layers & blocks t create digital drawings using relevant software's.
(22048) Fundamentals of Mechatronics *C213*	C213.1	Identify different instruments, sensors, actuators, microprocessors; software's and mechanical components in Mechatronics based system.
	C213.2	Use sensors for different Mechatronics applications.
	C213.3	Use transducers for different Mechatronics based applications.
	C213.4	Use actuators for various Mechatronics based applications.
	C213.5	Program PLC for various applications.
	C213.6	Use microprocessor and microcontroller for various Mechatronics based applications.

		Semester – 5 (ME5I)
(22509) Management *C301*	**C301.1**	Use basic management principles to execute daily activities.
	C301.2	Use principles of Planning & organizing for accomplishment of tasks.
	C301.3	Use principles of directing & controlling for implementation the plans.
	C301.4	Apply the principles of safety management in all activities.
	C301.5	Understand various provisions of Industrial Acts.
(22562) Power Engineering & Refrigeration *C302*	**C302.1**	Identify different components of IC Engine & its accessories.
	C302.2	Test the performance of IC Engine.
	C302.3	Maintain reciprocation Air Compressors.
	C302.4	Identify different components of Gas turbine & Jet engine.
	C302.5	Test the performance of refrigeration & air conditioning systems.
(22563) Advance Manufacturing Processes *C303*	**C303.1**	Maintain the non conventional machining processes to produce complex & hard to machine components.
	C303.2	Produce components using milling machine.
	C303.3	Choose relevant machining process to produce gears.
	C303.4	Maintain CNC Machine to produce components effectively.
	C303.5	Prepare CNC part programs for simple components.
	C303.6	Maintain functioning of Automated equipments.
(22564) Elements of Machine Design *C304*	**C304.1**	Select suitable materials for designing machine elements.
	C304.2	Design joints & levers for various applications.
	C304.3	Design the power transmission elements like shaft, keys & couplings.
	C304.4	Recommend the power screws and suitable fasteners for different applications.
	C304.5	Chose springs for various applications.
	C304.6	Select standard components with their specifications from manufacturing catalogues.
(22565) Tool Engineering *(Elective I)* *C305*	**C305.1**	Interpret geometries of various cutting tools.
	C305.2	Use relevant cutting tools inserts & tool holders for different machining operations.
	C305.3	Use relevant locating & clamping devices for components.
	C305.4	Use relevant jigs & fixtures for components and machining operations.
	C305.5	Use relevant press tools & press tool operations.
	C305.6	Use relevant die for bending & forging simple components.
(22566)	**C306.1**	Identify various components of hydro, steam, gas, diesel power plants.
	C306.2	Select high pressure boilers for power generations capacity of plant.

Power Plant Engineering *(Elective II)* *C306*	**C306.3**	Identify the components of steam, diesel & gas turbine power plant.
	C306.4	Measure water heat recovery in a typical thermal power plant.
	C306.5	Identify the components of nuclear power plant.
	C306.6	Estimate economic premasters of power plant.
(22049) Industrial Training *C307*	**C307.1**	Communicate effectively (Verbal as well as written) the work carried out.
	C307.2	Prepare and present the report of the work carried out.
	C307.3	Exercise time management and safety in the work environment.
	C307.4	Working in a team.
	C307.5	Demonstrate various quality assurances.
	C307.6	Exhibit the work carried out.
(22050) Capstone Project- Planning *C308*	**C308.1**	Write the problems/tasks specifications in existing system related to occupation.
	C308.2	Select, collect & use required information/knowledge to solve the problem/complete the task.
	C308.3	Logically choose relevant possible solutions.
	C308.4	Consider the ethical issues related to project (if there are any)
	C308.5	Access the impact of the project on society (if there is any)
	C308.6	Prepare project proposal with action plan an time duration scientifically before beginning of project.
(22053) Solid Modelling & Additive Manufacturing *C309*	**C309.1**	Prepare 2D Drawing using sketcher work bench of any parametric CAD Software.
	C309.2	Generate 3D solid Models from 2D sketch using part work bench of any parametric CAD Software.
	C309.3	Prepare assembly of part models using assembly work bench of any parametric CAD Software.
	C309.4	Generate orthographic view of 3D solid model/assemblies using drafting work bench of any parametric CAD Software.
	C309.5	Plat a drawing for given part model/ assembly.
	C309.6	Print component using 3D printer/rapid prototyping machine.

Semester – 6 (ME6I)		
(22652) Emerging Trends in Mech. Engg. *C310*	C310.1	Identify different new systems available in automobile.
	C310.2	Apply heat engineering principles in process boilers and waste heat recovery systems used in process industry.
	C310.3	Cite examples of modern manufacturing technology in industry.
	C310.4	Use different standards for energy management and audit of a given system.
	C310.5	Select recent agricultural equipment for pre and post harvesting.
(22655) Industrial Hydraulics & Pneumatics *C311*	C311.1	Identify various components of hydraulic & pneumatic systems.
	C311.2	Select pump & actuators for given fluid operated system.
	C311.3	Select appropriate control valves for given fluid operated system.
	C311.4	Select compressor and appropriate accessories for given fluid operated system
	C311.5	Develop different hydraulic circuits for given simple application.
	C311.6	Develop different pneumatic circuits for given simple application.
(22656) Automobile Engineering *C312*	C312.1	Prepare vehicle layouts with chassis specification.
	C312.2	Interpret power flow diagrams of transmission systems.
	C312.3	Select suitable braking & steering systems for different applications.
	C312.4	Select suspension system for different applications.
	C312.5	Prepare simple electrical-electronic circuits for automobile systems.
	C312.6	Select service tools for relevant service operation in automobile shops.
(22657) Industrial Engg. & Quality Control *C313*	C313.1	Apply work study techniques to optimize manufacturing processes.
	C313.2	Prepare the detailed sequence of operations for manufacturing of components.
	C313.3	Apply ergonomic principle for designing simple mechanical component.
	C313.4	Interpret the data obtained from the different quality control processes.
	C313.5	Interpret the control charts for variable and attribute data.
(22658) Computer Integrated Manufacturing *(Elective- I)* *C314*	C314.1	Prepare CAD/CAM/CIM product cycle for different products.
	C314.2	Apply CAM and CIM practices.
	C314.3	Apply business function software in CIM.
	C314.4	Apply networking in CIM.
	C314.5	Use of Flexible Manufacturing System & Automation concepts in industries.
	C314.6	Use of Robotics technology in industries.
(22660) Refrigeration & Air Conditioning	C315.1	Use refrigeration system for given application.
	C315.2	Use relevant refrigerants for different applications.
	C315.3	Select different refrigeration components for given refrigeration system.

(Elective – II) *C315*	**C315.4**	Select different air conditioning components for given air cond. System.
	C315.5	Determine cooling loads for air conditioning systems.
	C315.6	Select relevant tools for maintaining air conditioning systems.
(22661) Renewable Energy Technologies (Elective- III) *C316*	**C316.1**	Maintain mechanical components of solar thermal systems.
	C316.2	Maintain mechanical components of solar PV system.
	C316.3	Maintain mechanical components of Wind Turbines.
	C316.4	Maintain mechanical components of micro hydro turbines.
	C316.5	Maintain mechanical components of Biomass plants.
	C316.6	Maintain mechanical components of hybrid renewable energy system.
(22032) Entrepreureship Development *C317*	**C317.1**	Identify your entrepreneurial traits.
	C317.2	Identify the business opportunities that suit you.
	C317.3	Use the support systems to zero down to your business idea.
	C317.4	Develop comprehensive business plans.
	C317.5	Prepare plans to manage the enterprise effectively.
(22060) Capstone Project- Execution & Report Writing *C318*	**C318.1**	Implement the planned activity individually and/or as a team.
	C318.2	Select, collect & use required information/knowledge to solve the identified problems.
	C318.3	Incorporate energy and environment conservation principles.
	C318.4	Consider the ethical issues related to the project and assess the impact of the project on society.
	C318.5	Communicate effectively and confidently as a member & team leader.
	C318.6	Prepare project report after performing due plagiarism check using appropriate tools.