

COURSE OUTCOMES (M.E - ENGINEERING DESIGN)

REGULATION: 2013

S.NO	COURSE NAME	COURSE OUT COMES	
1	C101 - Advanced Numerical Methods (MA7169)	C101.1	Understand the basic concepts and numerical techniques for solving algebraic and transcendental equations
		C101.2	Interpret the various types of ordinary differential equations, numerical differentiation and integration models.
		C101.3	Utilize the finite element method for solving time dependent partial differential equation
		C101.4	Utilize the finite element method for solving elliptic equations
		C101.5	Interpret the various types of finite element method used to solve the problem in numerically
2	C102 - Advanced Mechanics of Materials (ED7101)	C102.1	Understand basic concept of elasticity.
		C102.2	compute the deflection of beams under unsymmetrical bending condition.
		C102.3	Evaluate the stresses in flat plate and curved members.
		C102.4	Analyse the torsion on non circular sections.
		C102.5	Determine the stresses in rotating member and contact stresses.
3	C103 - Computer Applications in Design (ED7102)	C103.1	Familiarize with the computer graphics application in design.
		C103.2	Understand the parametric curves and surfaces generated in computer graphics.
		C103.3	Explain the parametric solids generated in computer graphics.
		C103.4	Understand the visual reality in parametric curves, surfaces and solids generated in computer graphics.
		C103.5	Understand the computer aided design standards systems in various softwares.
4	C104 - Quality Concepts in Design (ED7103)	C104.1	Understand the design fundamentals and design of casting, forging, machining, metal forming and welding.
		C104.2	Familiarise the quality of design, to conduct and analyse experiments.
		C104.3	Apply failure mode and effect analysis and design for six sigma.
		C104.4	Acquire knowledge of the design of experiments.
		C104.5	Understand the reliability principles in the design of an engineering product or a service.
5	Vibration Analysis (ED7104)	C105.1	Apply the fundamental concepts of vibrating system.
		C105.2	Analyse two degree of freedom system under free and forced vibration.
		C105.3	Acquire the concepts of multi degree freedom and continuous system.

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	C105 - Vibration and Control	C105.4	Examine vibration control of mechanical systems.
		C105.5	Demonstrate the Experimental methods in vibration analysis
6	C106 - Design of Material Handling Equipments (ED7005)	C106.1	Understand about various material handling equipment.
		C106.2	Design the chain, rope, hooks and brakes in material handling equipment.
		C106.3	Able to develop the gear drives and cranes in material handling equipment.
		C106.4	Design the various conveyors and escalators.
		C106.5	Acquire design concepts of elevators, hoisting machine and forklift trucks.
7	C107 - CAD Laboratory (ED7111)	C107.1	Ability to use software package for three dimensional modelling software
		C107.2	Study the commands, toolbars and menus of the software.
		C107.3	Ability to create 3D models of mechanical Components.
		C107.4	Ability to do drafting and detailing of mechanical Components.
		C107.5	Ability to check interference in assembly of mechanical components.
8	C108 - Finite Element Methods in Mechanical Design (ED7201)	C108.1	Understand how to mathematically model physical systems and solve using numerical techniques.
		C108.2	Select appropriate element and boundary conditions for various 1D, 2D Boundary problems.
		C108.3	Apply various solution techniques to solve Boundary value problems and Eigen value problems
9	C109 - Mechanisms Design and Simulation (ED7202)	C109.1	Understand the fundamentals of kinematic in mechanism and robots.
		C109.2	Analyse the kinematics of various mechanisms and robot manipulators.
		C109.3	Understand the fundamentals concept of coupler curve in mechanisms.
		C109.4	Apply the concepts on synthesis of four bar mechanism.
		C109.5	Acquaint concepts on synthesis of coupler curve based mechanism.
10	C110 - Mechanical Behavior of Materials (ED7203)	C110.1	Understand the concept of material and its behaviour.
		C110.2	Analyse the material behaviour under dynamic loads and design approach.
		C110.3	Acquire the concept of material selection.
		C110.4	Explain the modern metallic materials.
		C110.5	Discuss the properties and application of non metallic materials
11	Integrated Mechanical Design (ED7204)	C111.1	Investigation on shaft subject to combined static and variable loads.
		C111.2	Design of gears and gear boxes for various applications.

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11	C111 - In-Mechanics (ED7007)	C111.3	Analyse about brakes and clutches under dynamic loads.
		C111.4	Examine the integrated design while assembling various components.
12	C112 - Advanced Metal Forming Techniques (ED7008)	C112.1	Understand the theory of plasticity and forming.
		C112.2	Analyse manufacturing methods of forming with finite element methods.
		C112.3	Acquire concept of sheet metal forming techniques.
		C112.4	Study the powder metallurgy and special forming processes.
		C112.5	Acquaint electromagnetic forming and its application.
13	C113 - Surface Engineering (ED7012)	C113.1	students to get familiarized with the various type of friction surfaces
		C113.2	Analyse various type of wears and its measurements
		C113.3	Understand the concept of corrosion principle, types, material selection and protection methods
		C113.4	Understand the various types of surface type of surface heat treatment process, methodologies and material selection process
14	C114 - Analysis and Simulation Laboratory (ED7211)	C114.1	Ability to analyse stress and deflection on beam.
		C114.2	Ability to do thermal analysis and heat transfer on plates.
		C114.3	Ability to do vibration analysis on spring mass system.
		C114.4	Ability to analyse 3D models of mechanical Components.
		C114.5	Understand the basics of MATLAB.
15	C115 - Design Project (ED7212)	C115.1	Identify / Analyze a problem in Mechanical Engineering field.
		C115.2	Demonstrate a depth of knowledge of Mechanical Engineering.
		C115.3	Analyze complex Mechanical Engineering problems. Develop appropriate tools to find the solution for the problem.
		C115.4	Apply appropriate Engineering techniques, methodology and design processes of any components.
		C115.5	Develop solutions to problems and apply innovative approaches in design of Mechanical systems and machines.
16	C201 - Engineering Fracture Mechanics (ED7002)	C201.1	Understand elastic, plastic and elasto-plastic deformation under stress-strain condition.
		C201.2	Apply the concepts of fatigue crack with the design of components under static load condition.
		C201.3	Analyse the energy balance with the design of components under static load condition.
		C201.4	Evaluate the crack growth with the design of components under static load condition.

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	C201	C201.5	Familiarise with the design of components that contain crack and its growth under fatigue load condition.
17	C202 - Design of Hydraulic and Pneumatic Systems (ED7004)	C202.1	Summarize the features and function of hydraulic motors, actuators
		C202.2	Explain the different types of pressure valves and regulation elements
		C202.3	Explain the different type of Hydraulic circuit and systems
		C202.4	Explain the different type of Pneumatic circuit and Electro pneumatic systems
		C202.5	Explain the circuit analysis of Electromagnetic and electronic control of Hydraulic and Pneumatic
18	C203 - Design for Manufacture Assembly and Environments (CC7201)	C203.1	To make the students get acquainted knowledge in strength, Material selection, tolerance and its features
		C203.2	To make the students get acquainted with the design for manufacturing in machine selection and component design
		C203.3	To knowledge in selection of casting methods of parameters and design
		C203.4	To make the students get acquainted with the design for manufacturing environment
19	C204 - Project Phase - I (ED7311)	C204.1	Student apply the knowledge gained to create projects that meet industrial requirement
		C204.2	Familiarize with designing solutions for complex engineering problems and design system components.
		C204.3	Applying ethics principles and to commit the responsibilities and norms of engineering practice,
		C204.4	Recognize the need for the preparation and the ability to engage in independent thereby also promoting to communicate effectively on complex engineering activities and being able to design and write effective documentation.
20	C205 - Project Phase - II	C205.1	Apply the knowledge of Engineering fundamentals, mathematics and an engineering specialization, thereby formulating research work and analyse complex engineering problems.
		C205.2	Familiarize with designing solutions for complex engineering problems and design system components, thereby formulating research based knowledge for the design of project work.
		C205.3	Impart appropriate techniques, resource and modern engineering and modeling to engineering design problems with an understanding of the limitations.
		C205.4	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.
		C205.5	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.