

Meerut Institute of Technology, Meerut

Updated Course Outcomes (COs) _2nd, 3rd & 4th Year ODD SEM. (Branch: Mechanical Engineering) _2024-25

S. NO.	Subject Code	Subject Name	Outcomes	
1	BME301	Thermodynamics	CO1	To understand the basic terms of thermodynamics
			CO2	To apply I law to various energy conversion devices
			CO3	To evaluate the changes in properties of substances in various processes
			CO4	To understand the difference between high grade and low-grade energies:
2	BME302	Fluid Mechanics and Fluid Machines	CO1	Understand the application of mass and momentum conservation laws for fluid flows.
			CO2	Understand the importance of dimensional analysis.
			CO3	Evaluate the velocity and pressure variations in various types of simple flows.
			CO4	Mathematically analyze the flow in water pumps and turbines.
			CO5	Understand about the functioning of centrifugal and reciprocating pumps.
3	BME303	Materials Engineering	CO1	Students will be able to identify the crystal structure and measure the mechanical properties of materials.
			CO2	Students will be able to test the various failures of materials.
			CO3	Students will be able to identify the mechanical properties based on composition of micro-constituents depicted in the phase-diagram.
			CO4	Students will understand the concept of improving the mechanical properties through heat treatment.
			CO5	Students will learn the structure and properties of alloys and composites.
4	BME351	Fluid Mechanics Lab	CO1	Understand the principles and performance characteristics of flow and thermal devices.
			CO2	Know about the measurement of the fluid properties
			CO3	Understand and analyze various properties of fluids
			CO4	Evaluate the performance characteristics of fluid/thermal machinery
			CO5	Evaluate the velocity and pressure variations in various types of simple flows.
5	BME352	Material Testing Lab	CO1	Students will be able to perform different destructive and non-destructive testing methods to measure various mechanical properties
			CO2	Students will be able to analyse the effect of different heat-treatment processes on the Hardness.
			CO3	Students will be able to simulate the material using simulating software / measure the mechanical properties of 3-D printed components

6	BME353	Computer Aided Machine Drawing-I Lab	CO1	Understand and apply 2D software to develop a part model
			CO2	Understand about temporary and permanent fasteners
			CO3	Understand the need for free hand sketching, Free hand sketching of foundation bolts etc.
			CO4	Create assembly drawing of simple machine elements like rigid or flexible coupling
			CO5	Create 2D drawings and assemblies of various machine components
7	BME502	MACHINE DESIGN	CO1	Recall the basic concepts of Solid Mechanics to understand the subject.
			CO2	Classify various machine elements based on their functions and applications.
			CO3	Apply the principles of solid mechanics to machine elements subjected to static and fluctuating loads.
			CO4	Analyze forces, bending moments, twisting moments and failure causes in various machine elements to be designed.
			CO5	Design the machine elements to meet the required specification.
8	BME503	Industrial Engineering	CO1	Understand the concept of production system, productivity, facility and process planning in various industries
			CO2	Apply the various forecasting and project management techniques
			CO3	Apply the concept of break-even analysis, inventory control and resource utilization using queuing theory
			CO4	Apply principles of work study and ergonomics for design of work systems
			CO5	Formulate mathematical models for optimal solution of industrial problems using linear programming approach
9	BME051	Advance Manufacturing Processes	CO1	Understand the physics of advanced machining process
			CO2	Analysis of advanced casting processes
			CO3	Selection of advanced welding process
			CO4	Analysis of advanced metal forming processes
			CO5	Product development using the advanced manufacturing processes
10	BME501	Heat & Mass Transfer	CO1	Understand the fundamentals of heat and mass transfer. Blooms Taxonomy.
			CO2	Apply the concept of steady and transient heat conduction.
			CO3	Apply the concept of thermal behavior of fins.
			CO4	Apply the concept of forced and free convection.
			CO5	Apply the concept of radiation for black and non-black bodies.
			CO6	Conduct thermal analysis of heat exchangers.

11	BME054	MECHATRONIC SYSTEMS	CO1	Identify key elements of mechatronic and its representation by block diagram
			CO2	Understand the concept of sensors and use of interfacing systems.
			CO3	Understand the concept and applications of different actuators
			CO4	Illustrate various applications of mechatronic systems.
			CO5	Develop PLC ladder programming and implementation in real life problem.
12	BME551	Heat & Mass Transfer Lab	CO1	Apply the concept of conductive heat transfer.
			CO2	Apply empirical correlations for both forced and free convection to determine the value of convection heat transfer coefficient
			CO3	Apply the concept of radiation heat transfer for black and grey body.
			CO4	Analyze the thermal behaviour of parallel or counter flow heat exchangers
			CO5	Conduct thermal analysis of a heat pipe
13	BME552	MACHINE DESIGN LAB	CO1	Apply the principles of solid mechanics to design various machine Elements subjected to static and fluctuating loads
			CO2	Achieve an expertise in design of Sliding contact bearing in industrial applications.
			CO3	Write computer programs and validate it for the design of different machine elements
			CO4	Evaluate designed machine elements to check their safety.
14	KME071	Additive manufacturing	CO1	Understanding the basics of additive manufacturing/rapid prototyping and its advantages and disadvantages
			CO2	Understanding the role of additive manufacturing in the design process and the implications for design.
			CO3	Understanding the processes used in additive manufacturing for a range of materials and application
			CO4	Understand the various software tools, processes and techniques that enable advanced/additive manufacturing and personal fabrication.
			CO5	Apply knowledge of additive manufacturing for various real-life applications
15	KAU073	Vehicle Body Engineering & safety	CO1	Understand the classification of the vehicles on the basis of body.
			CO2	Understand the importance of material selection in designing automotive bodies
			CO3	Understand the concepts of aerodynamics used in designing automobiles.
			CO4	Understand the importance of interior and exterior ergonomics while designing the vehicle.
			CO5	Identify various sources of noise and methods of noise separation and various safety aspects in a given vehicle.
			CO6	Calculate various aerodynamic forces and moments acting on vehicle, load distribution in vehicle body and stability of vehicle.
16	KME751	MEASUREMENT & METROLOGY Lab	CO1	Understand the basic principles of instrumentation for measurement of surface finish, strain, temperature, pressure and flow.
			CO2	Understand the principle and operation of Coordinate Measuring Machine(CMM)
			CO3	Apply Sine Bar, Slip Gauges, Bevel Protractor, Stroboscope, Dial Indicator etc. for measurement of different attributes
			CO4	Apply the basic concepts of limits, fits & tolerances for selective assembly.