



Everest Educational Society's Group of Institutions

College of Engineering & Technology

Department of Mechanical Engineering

COURSE OUTCOME

BACHELOR OF MECHANICAL ENGINEERING

MED104 Engineering Graphics

- MED104.1 Identify basic concepts in drawing and their applications.
- MED104.2 Plan and create neat orthographic drawings of points, straight lines, planes, and solids.
- MED104.3 Develop the ability to visualize and draw orthographic and isometric projections of solids.
- MED104.4 Create engineering drawings of real-life objects using engineering principles.

MED153 Basic Mechanical Engineering

- MED153.1 Identify the operation of diverse devices and processes employed in thermal systems.
- MED153.2 Describe the working principles of different power transmitting elements.
- MED153.3 Classify the properties and applications of various engineering materials.
- MED153.4 Identify a variety of machines used in Mechanical Engineering and Manufacturing Processes.

BSH201 Engineering Mathematics - III

- BSH201.1 Demonstrate a basic understanding of linear differential equations and showcase their relevance in engineering mathematics.
- BSH201.2 Explain the fundamental concept of Fourier transform and its applications in engineering.
- BSH201.3 Demonstrate the use of statistical concepts for numerical values in engineering.
- BSH201.4 Showcase basic knowledge of vectors and their differentiation in engineering contexts.



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MED202 Thermodynamics - I

- MED202.1 Apply the First Law and Second Law of thermodynamics.
- MED202.2 Analyze the concepts of Entropy and Availability in thermodynamics.
- MED202.3 Analyze thermodynamic cycles and assess their performance.
- MED202.4 Identify the state of steam and its properties in thermodynamics.

MED203 Machine Drawing

- MED203.1 Apply the concept of curves and developed surfaces in sheet metal product manufacturing.
- MED203.2 Utilize knowledge of intersection curves for joining surfaces in manufacturing processes.
- MED203.3 Understand the drawing standards followed in industries for technical drawings.
- MED203.4 Create production drawings, assembly drawings, and detail drawings in manufacturing.

MED204 Strength of Materials

- MED204.1 Calculate normal and shear stresses for different structural members under various loading conditions.
- MED204.2 Plot shear and bending moment diagrams for beams subjected to different loads and support conditions.
- MED204.3 Apply Euler's equation to calculate axial buckling loads in columns and determine shear stress distribution in solid and hollow round members under torsional loading conditions.
- MED204.4 Determine Principal Stresses under various combinations of bending, torsion, and axial loads, and calculate maximum deflection in statically determinate beams.

MED205 Production Processes

- MED205.1 Apply the fundamental concepts of molding in practical applications.
- MED205.2 Develop knowledge in pattern making and related concepts.



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- MED205.3 Apply the concepts of plastic processing in manufacturing.
- MED205.4 Explore various welding methods and learn surface treatment techniques.

BSH251 Engineering Mathematics - IV

- BSH251.1 Demonstrate basic knowledge of Laplace transform, inverse Laplace transform, and their applications.
- BSH251.2 Demonstrate basic knowledge of Partial Differential Equations and their applications.
- BSH251.3 Demonstrate basic knowledge of Numerical Methods and Curve Fitting.
- BSH251.4 Demonstrate basic knowledge of functions of complex variables (Differential calculus & Integral calculus).

MED252 Thermodynamics - II

- MED252.1 Identify parts and describe the functions of various components of steam boilers. Evaluate the performance of boilers.
- MED252.2 Analyze the concept of draught and its working principles. Select the type of nozzles for specific applications.
- MED252.3 Select the appropriate type of condenser and cooling tower for particular applications.
- MED252.4 Analyze the performance of vapor power cycles. Select the suitable type of compressor for specific applications.

MED253 Theory of Machines - I

- MED253.1 Apply the fundamental concepts of kinematics, kinematic links, and their applications.
- MED253.2 Apply the knowledge of relative and instantaneous velocity, radial and tangential acceleration to develop the ability to formulate and solve problems.
- MED253.3 Acquire knowledge of cam mechanisms, their motions, accelerations, and understanding of brakes.
- MED253.4 Apply knowledge of balancing rotating masses to solve practical problems based on mechanisms and their analysis.



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MED254 Electrical Machines

- MED254.1 Formulate and then analyze the working of any electrical machine using mathematical models under loaded and unloaded conditions.
- MED254.2 Troubleshoot the operation of an electrical machine and conduct testing and experimental procedures on different types of electrical machines.
- MED254.3 Select a suitable measuring instrument for measuring electrical and non-electrical quantities for a given application.
- MED254.4 Conduct experiments on AC machines to determine their characteristics.

MED255 Machine Tools

- MED255.1 Identify various machines and their components, and learn how to use them.
- MED255.2 Apply the various types of machines and understand their operations.
- MED255.3 Analyze the operations of a lathe, including various attachments and components.
- MED255.4 Understand non-traditional machining methods and machine tool maintenance.

MED301 Design of Machine Elements - I

- MED301.1 Calculate stresses on the member under different loading conditions.
- MED301.2 Illustrate the design of cotter joints, knuckle joints, shafts, keys, and couplings.
- MED301.3 Formulate designs to withstand fluctuating loads.
- MED301.4 Evaluate the design of springs, riveted joints, and welding joints.

MED302 Materials and Metallurgy

- MED302.1 Remember the properties and structure of materials, including strengthening mechanisms.
- MED302.2 Understand phase diagrams and heat treatment of steels.
- MED302.3 Understand steel, cast irons, and their properties.
- MED302.4 Understand non-ferrous alloys and advanced materials.



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MED303 Fluid Mechanics and Machines

- MED303.1 Apply the concepts of different types of fluids and their properties.
- MED303.2 Apply Pascal's law and understand its applications, along with the physical significance and application of the center of buoyancy and metacentric height.
- MED303.3 Identify the concepts of fluid kinematics and dynamics, along with the application of dimensional analysis and Computational Fluid Dynamics (CFD).
- MED303.4 Apply the concept of boundary layer and understand its applications.

MED304 Theory of Machines - II

- MED304.1 Apply the working principles of gears and their applications.
- MED304.2 Apply the principles of gyroscopic effect for the stability of different vehicles and their applications.
- MED304.3 Analyze the forces on governors and the related terminology.
- MED304.4 Calculate pressure on different types of clutches and also determine the power transmitting capacity of belt, rope, and chain drives.

MED305 Modern Management Techniques

- MED305.1 Explore management principles, characteristics, and functions. Understand the importance of management and its role in decision-making.
- MED305.2 Explain methods engineering techniques such as KAIZEN, POKA-YOKE, SMED, JIT, and KANBAN.
- MED305.3 Define lean manufacturing and its key terms. Implement 5S principles using the PDCA cycle. Introduce Total Productive Maintenance.
- MED305.4 Define creativity and innovation, their characteristics, and significance.

BSH305 Communication Skill - II

- BSH305.1 Understand communication, its purpose, significance, and channels.
- BSH305.2 Understand verbal communication.
- BSH305.3 Understand nonverbal communication.
- BSH305.4 Understand barriers and breakdowns in communication and its etiquettes.



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MED351 Design of Machine Elements - II

- MED351.1 Analyze and evaluate forces and stresses within a gear system.
- MED351.2 Select appropriate mechanical drive components using design principles.
- MED351.3 Develop the capability to analyze and select various design criteria.
- MED351.4 Foster creativity in designing various types of bearings.

MED352 Heat Transfer

- MED352.1 Explain and apply the basic concepts of conduction, convection, and radiation in various applications.
- MED352.2 Analyze the concepts of free and forced convection.
- MED352.3 Interpret and evaluate the concept of radiation through black bodies and non-black bodies.
- MED352.4 Analyze the construction, working, and performance of different types of heat exchangers.

MED353 Tool Engineering

- MED353.1 Understand the theory of metal cutting, tool geometry, and tool life calculation.
- MED353.2 Acquire and apply fundamental principles of locating and clamping devices.
- MED353.3 Impart knowledge about jig and fixture design.
- MED353.4 Familiarize with the concept of die design for piercing, blanking, bending, and forming.

MED354 CAD/CAM

- MED354.1 Define CAD/CAM and understand its hardware and transformations.
- MED354.2 Identify appropriate computer graphics techniques for geometric modeling.
- MED354.3 Describe CNC machine tools.
- MED354.4 Discuss manufacturing automation, robotics, and rapid prototyping.



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MED355 Elective - I - Industrial Hydraulic & Pneumatics

- MED355.1 Understand the principles of hydraulics and pneumatics, including their symbols and usage.
- MED355.2 Understand hydraulic and pneumatic machines, including pumps and actuators.
- MED355.3 Understand different types of hydraulic and pneumatic controls, accessories, and circuits.
- MED355.4 Understand the introduction to electro-hydraulics and electro-pneumatics.

MED401 IC Engines And Gas Turbines

- MED401.1 Illustrate IC engine fuel requirements, cycle analysis, and alternative fuels.
- MED401.2 Differentiate between combustion in SI engines and CI engines.
- MED401.3 Illustrate performance testing of IC engines and emissions from IC engines.
- MED401.4 Understand gas turbines and their applications. Analyze gas turbine cycles and efficiency enhancement methods. Compare gas turbines to internal combustion engines.

MED402 Automatic Control System

- MED402.1 Understand the basic control system and solve mathematical modeling problems.
- MED402.2 Evaluate block diagram reduction and signal flow graphs.
- MED402.3 Understand control actions in controllers.
- MED402.4 Analyze systems in both time and frequency domains and comprehend the concept of stability.

MED403 Metrology and Quality Control

- MED403.1 Understand the salient principles, construction, usage techniques, handling, and maintenance of various measuring instruments.
- MED403.2 Develop the necessary concepts and principles to effectively use different types of measuring instruments.
- MED403.3 Impart the ability to analyze, interpret, and draw conclusions from data,



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instruments, graphs, and charts related to the field of quality control.

MED403.4 Suggest measures to improve product quality and reduce costs.

MED404 Energy Conservation and Management

MED404.1 Understand energy sources and conservation principles.

MED404.2 Learn to identify energy inefficiencies.

MED404.3 Apply principles to real-world scenarios.

MED404.4 Learn energy assessment techniques and implement energy-saving measures.

MED406 Elective - II - Power Plant Engineering

MED406.1 Apply and acquire knowledge of different types of power plants.

MED406.2 Develop an understanding of industrial power plant types and their applications.

MED406.3 Apply this knowledge to assess the stability of each type of power plant.

MED406.4 Analyze the various operations, outcomes, and applications based on economic conditions.

MED451 Automobile Engineering

MED451.1 Identify different parts of the automobile and explain the workings of various components such as the engine, transmission, clutch, and brakes.

MED451.2 Describe how the steering and suspension systems operate.

MED451.3 Understand the environmental implications of automobile emissions.

MED451.4 Develop a strong foundation for understanding future developments in the automobile industry.

MED452 Project Management and Operation Research

MED452.1 Able to formulate and solve mathematical models (linear programming problems) for physical situations such as production, distribution of goods, and economics.

MED452.2 Able to solve transportation problems involving the movement of products from origins to destinations with the least transportation cost.



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MED452.3 Able to recognize basic types of queuing models, derive and calculate steady-state system performance characteristics, and analyze projects to manage resources, minimize costs, and handle uncertainty.

MED452.4 Able to identify the resources required for a project, and generate a plan and work schedule.

MED453 Refrigeration and Air Conditioning

MED453.1 Interpret thermodynamic cycles and simple VCC (Vapor Compression Cycle). Identify different compound VCC systems.

MED453.2 Explain the air refrigeration system.

MED453.3 Illustrate the concept of VARC (Variable Refrigerant Capacity).

MED453.4 Formulate psychrometry and air conditioning systems. Select environmentally friendly refrigerants for specific applications of RAC (Refrigeration and Air Conditioning).

MED456 Elective - III - Industrial Engineering

MED456.1 Understand different types of studies in industrial engineering.

MED456.2 Construct operations process charts, models, and diagrams for manufacturing and operations planning.

MED456.3 Use flow process charts, time study, merit rating, Kaizen, and SMED (Single-Minute Exchange of Die).

MED456.4 Understand occurrence sampling for job evaluation, methods improvement, and work measurement applications.