

DIPLOMA IN MECHANICAL ENGINEERING

3-Year Programme • 6 Semesters • Semester-wise Syllabus & Course Details

Programme Overview

The Diploma in Mechanical Engineering is a three-year technical programme designed to develop fundamental and practical skills in mechanical design, manufacturing, thermal engineering, fluid systems, machine maintenance, CAD/CAM, CNC, automation and industrial safety. The programme combines classroom learning with laboratory, workshop and project-based training.

Note: Subject codes in this document are a structured reference numbering scheme (DME-101 to DME-607). Actual codes, credits and examination schemes may vary by the affiliating university/board.

Semester I

Subject Code	Subject Name	Course Details
DME-101	Engineering Mathematics – I	Algebra, trigonometry, differential calculus and basic mathematical methods used in engineering.
DME-102	Engineering Physics	Mechanics, properties of matter, heat, waves, optics and basic engineering applications.
DME-103	Engineering Chemistry	Water technology, fuels, corrosion, polymers, metals and industrial chemistry fundamentals.
DME-104	Communication Skills	Technical English, communication, comprehension, report writing and professional communication.
DME-105	Engineering Graphics – I	Geometrical construction, orthographic projection, sectional views and basic engineering drawing.
DME-106	Workshop Practice	Fitting, carpentry, welding, sheet metal and basic machine-shop practices.
DME-107	Computer Fundamentals	Computer hardware, operating systems, office applications, internet and basic digital skills.

Semester II

Subject Code	Subject Name	Course Details
DME-201	Engineering Mathematics – II	Integral calculus, differential equations, coordinate geometry and engineering applications.
DME-202	Applied Physics	Electrical, magnetic, semiconductor, optics and modern-physics concepts relevant to engineering.
DME-203	Basic Electrical & Electronics Engineering	DC/AC circuits, electrical machines, measuring instruments, diodes, transistors and digital basics.
DME-204	Engineering Mechanics	Force systems, equilibrium, friction, centroid, moment of inertia and basic dynamics.
DME-205	Manufacturing Processes – I	Casting, forging, rolling, extrusion, welding and introductory machining processes.
DME-206	Engineering Graphics – II	Machine elements, assembly drawings, development of surfaces and advanced projection methods.

Semester III

Subject Code	Subject Name	Course Details
DME-301	Engineering Mathematics – III	Matrices, complex numbers, statistics, numerical methods and engineering applications.
DME-302	Strength of Materials	Stress and strain, shear force and bending moment, torsion, beams and columns.
DME-303	Thermodynamics	Properties of pure substances, laws of thermodynamics, cycles, entropy and energy conversion.
DME-304	Fluid Mechanics	Fluid properties, pressure measurement, fluid flow, Bernoulli equation, pipes and hydraulic machines.
DME-305	Manufacturing Processes – II	Lathe, drilling, milling, grinding, machining operations and advanced manufacturing methods.
DME-306	Machine Drawing	Detailed drawings of machine components, fits, tolerances, joints and assemblies.

Semester IV

Subject Code	Subject Name	Course Details
DME-401	Theory of Machines	Mechanisms, velocity and acceleration, gears, flywheels, governors, balancing and vibrations.
DME-402	Heat Transfer	Conduction, convection, radiation, heat exchangers and thermal applications.
DME-403	Hydraulic & Pneumatic Systems	Hydraulic circuits, pumps, valves, pneumatic components, control systems and applications.
DME-404	Engineering Materials	Ferrous/non-ferrous metals, alloys, heat treatment, polymers, ceramics and material selection.
DME-405	Metrology & Measurements	Limits, fits, tolerances, measuring instruments, gauges and measurement techniques.
DME-406	Machine Design – I	Design principles, stresses, shafts, keys, couplings, fasteners and basic machine components.

Semester V

Subject Code	Subject Name	Course Details
DME-501	Machine Design – II	Design of gears, bearings, clutches, brakes, pressure vessels and advanced machine elements.
DME-502	Production Technology	Production planning, tooling, advanced machining, welding technology and process selection.
DME-503	Industrial Engineering & Management	Work study, productivity, plant layout, inventory, quality control and industrial management.
DME-504	CAD/CAM	2D/3D CAD, computer-aided drafting, modelling, CAM concepts and manufacturing integration.
DME-505	Refrigeration & Air Conditioning	Refrigeration cycles, refrigerants, compressors, condensers, evaporators and AC systems.
DME-506	CNC Machine & Programming	CNC machine fundamentals, coordinates, G/M codes, part programming and CNC operations.

Semester VI

Subject Code	Subject Name	Course Details
DME-601	Mechatronics & Automation	Sensors, actuators, PLC basics, control systems, robotics and automated production.
DME-602	Maintenance Engineering	Preventive, predictive and breakdown maintenance, lubrication, reliability and maintenance planning.
DME-603	Industrial Safety Management	Workplace hazards, PPE, fire safety, machine safety, emergency procedures and safety management.
DME-604	Computer Aided Manufacturing	CNC integration, process planning, computer-aided manufacturing systems and production automation.
DME-605	Robotics & Industrial Automation	Industrial robots, robot programming concepts, automation cells and manufacturing applications.
DME-606	Entrepreneurship & Management	Entrepreneurship, business planning, costing, marketing, finance and small-business management.
DME-607	Major Project	Practical industry-oriented project involving design, manufacturing, automation, CAD/CAM or maintenance.