

Course Descriptions

ME 1 Introduction to Mechanical Engineering

Overview of Mechanical Engineering as a field and a profession; Mechanical Engineering fundamentals, applications, and industries; Mechanical Engineering in the Philippines.

ME 11 Mathematical Methods in Mechanical Engineering I

Fundamentals and applications of ordinary differential equations (ODEs) in Mechanical Engineering; numerical interpolation, differentiation, and integration; fundamentals and applications of linear algebra in Mechanical Engineering; numerical methods for ODEs.

ME 12 Mathematical Methods in Mechanical Engineering II

Frequency domain and transforms; partial differential equations; statistical estimation, simulation, and inference in Mechanical Engineering; numerical methods for systems of equations; introduction to optimization.

ME 31 Mechanical Engineering CAD

Introduction to 3D computer-aided design (CAD); parametric solids, mechanical assemblies, form features, curves, and engineering drawings.

ME 32 Machine Operations

Fundamentals of machine operations and tools; shop practices and safety.

ME 51 Mechanics of Materials I

Introduction to mechanics of materials; stresses in and deformations of components under external loading; yield and fracture failure theories; introduction to energy methods and impact loading.

ME 61 Fundamentals of Thermal and Fluids Engineering

Fundamental concepts of thermodynamics, fluid mechanics, and heat transfer; laws of thermodynamics; entropy; exergy; fluid statics and kinematics; Reynolds transport theorem; rate equations of heat transfer modes; thermal networks.

ME 62 Thermal and Fluids Engineering Systems

Mixture processes; combustion fundamentals; power and refrigeration systems; exergy analysis of systems.

ME 71 Sensors and Actuators

Introduction to microcontrollers, analog and digital sensors and transducers; signal conversion and conditioning; sensor performance and specifications; industrial instrumentation; stepper and DC motors; hydraulic and pneumatic actuators.

ME 100 Mechanical Engineering Industries

Overview of mechanical engineering industries and industry-specific practices; industry trips and analysis of technical, safety, ecological, societal, and economic aspects of operations; career orientation and planning; ME laws, professional ethics, and ME standards.

ME 113 Mechanical Engineering Simulations

Introduction to computer-aided engineering (CAE); finite element analysis for heat conduction and structural mechanics; computational fluid dynamics; introduction to Multiphysics simulations; multibody dynamics.

ME 133 Introduction to Mechanical Engineering Design

Introduction to engineering design process and problem solving; basic selection of machine elements; mechanisms, structures, and joint interfaces; basic mechanism synthesis; basic design optimization.

ME 134 Fundamentals of Manufacturing Processes

Manufacturing processes, variation and quality, and equipment and controls; design for manufacturing; introduction to manufacturing systems.

ME 152 Mechanics of Materials II

Introduction to mechanical characterization; linear elastic fracture mechanics; introductory fatigue failure analysis; plastic response and failure; buckling instabilities; miscellaneous failure modes

ME 156 Machine Design

Application of mechanics and materials fundamentals to machine design, and design and selection of machine elements; integration of machine structures and elements.

ME 163 Thermal and Fluids Engineering Processes

Heat conduction; conservation laws; modeling and similitude; boundary layers; internal and external flows; forced and free convection; radiation heat transfer.

ME 166 Thermal and Fluids Engineering Design

Application of thermal and fluids engineering fundamentals to the analysis and design of industrial and power plant devices; advanced energy conversion.

ME 172 Experimentation and Technical Exposition in Mechanical Engineering

Design and execution of experiments; statistical analysis and analysis of experimental data; calibration of measuring instruments; technical writing and presentation.

ME 190 Mechanical Engineering Research I

Methods, processes, and techniques for conceiving, designing, implementing, operating, and documenting experimental research; conception and design of a mechanical engineering research project.

ME 195 Product Engineering I

Methods, processes, and techniques for conceiving, designing, prototyping, and operating a product; product design documentation

ME 199 Mechanical Engineering Research II

Construction of a physical experimental apparatus; writing of software for computational experiments; collection, reduction, and analysis of experimental data; research exposition.

