

MECHANICAL ENGINEERING TECHNOLOGY (MCET)

MCET 100 Survey of Mechanical Engineering Technology (2 Units)

Corequisite: MATH 154. Overview of the Mechanical Engineering Technology degree programs; pre-testing; career opportunities; professional societies & certification; standards; and useful tools of the MET field. (Formerly 2920:100)

MCET 101 Introduction to Mechanical Design (3 Units)

Prerequisite: AMET 140 or MCET 121. Pre/Corequisites: [AMET 230 or MCET 100] and [MATH 154 or higher]. Topics in engineering drawing: conventions, sections, dimensioning and tolerancing. Detail drawings, subassembly and assembly drawings. Introduction to various mechanical components and mechanical design tools. (Formerly 2920:101)

MCET 102 Introduction to Engineering Technology (2 Units)

This introductory course stresses skills needed for academic success. Discussion of fields in engineering technology, job searches, calculators, and data measurement and analysis are included. (Formerly 2820:100)

MCET 103 Tools for Mechanical Engineering Technology (3 Units)

Pre/Corequisite: MATH 154 or MATH 149 or higher math or higher math placement. Introduction to the Mechanical Engineering Technology program focusing on computational tools and engineering fundamentals. Practical skills using tools such as Microsoft Excel, PowerPoint, and Word. Hands-on activities including design and build projects, mechanical measuring devices, note-taking, and time management. Application of engineering principles in real-world scenarios. Laboratory.

MCET 110 Physical Science for Technicians (3 Units)

Elementary presentation of theory and facts of general chemistry and physics (excluding electricity). Includes atomic structure, chemical reactions, energy, electromagnetic radiation, sound and mechanics. (Formerly 2820:110)

MCET 121 Fundamentals of Engineering Drawing (3 Units)

Fundamentals of engineering drawing using freehand sketching and CAD; orthographic and isometric projections, sectioning, assemblies, and introduction to geometric dimensioning and tolerancing. Laboratory. (Formerly 2920:121)

MCET 130 Introduction to Hydraulics and Pneumatics (3 Units)

Principles of hydrostatic forces, pressure, density, viscosity, incompressible and compressible fluids. Principles of hydraulic and pneumatic devices and systems. (Formerly 2920:130)

MCET 131 Software Applications for Technology (1 Unit)

Prerequisite: MATH 153. Word processing and spreadsheets used within technical applications. This course focuses on using software for technical reports and data analysis. Laboratory. (Formerly 2820:131)

MCET 142 Introduction to Material Technology (3 Units)

Fundamental properties of materials. Material testing. Applications of methods to control material properties. (Formerly 2920:142)

MCET 243 Kinematics (3 Units)

Prerequisite: COET 125. Pre/Corequisite: MCET 101. Study of rigid-body motions of simple linkages, cams, gears, and gear trains. Vector solutions emphasized. Industrial applications presented and computers used to analyze mechanisms. (Formerly 2920:243)

MCET 245 Mechanical Design II (4 Units)

Prerequisites: MCET 101, MCET 142, MCET 243, and COET 225. Stress analysis, fatigue analysis, theories of failure. Design of machine elements: gears, keys and keyways. Experimental stress analysis; reverse engineering project that applies principles to practical engineering problems. (Formerly 2920:245)

MCET 249 Applied Thermal Energy I (3 Units)

Prerequisites: [MATH 255 or MATH 221] and [PHYS 262 or PHYS 292]. Thermodynamic principles. Study of power cycles. Applications in I.C. engines, compressors, steam power cycles, refrigeration. Laboratory experiments in applied thermal energy. (Formerly 2920:249)

MCET 251 Fluid Power (2 Units)

Prerequisites: PHYS 160 and PHYS 164. Statics and dynamics of fluids. Viscosity, energy and momentum relationships. Fluid machinery and measurements. (Formerly 2920:251)

MCET 252 Thermo-Fluids Laboratory (1 Unit)

Prerequisite: MCET 251. Corequisite: MCET 249. Laboratory experiments in applied thermal energy and fluid power. (Formerly 2920:252)

MCET 253 Fluid Mechanics (3 Units)

Prerequisite: PHYS 262 or PHYS 292. Statics and dynamics of fluids. Viscosity, energy and momentum relationships. Fluid machinery and measurements. Laboratory experiments in applied fluid power.

MCET 261 Manufacturing Processes (3 Units)

Prerequisite: MATH 154. Study of manufacturing processes (casting, forging, welding, forming sheet metal), integrating material technology, mechanical design, and mechanics of materials. (Formerly 2920:347)

MCET 290 Special Topics: Mechanical Engineering Technology (1-3 Units)

Prerequisite: Permission. Selected topics or subject areas of interest in Mechanical Engineering Technology. (May be repeated for a total of four credits) (Formerly 2920:290)

MCET 310 Economics of Technology (3 Units)

Prerequisite: 64 credits or permission. Economic principles as they pertain to technology. Equivalence, alternatives, costs, depreciation, valuation. Project studies. (Formerly 2920:310)

MCET 312 Programming for Technologists (2 Units)

Prerequisites: MCET 131 and MATH 255. A study of a technical programming language with applications in engineering technology. Limited to students in Engineering & Science Technology Department programs. (Formerly 2820:310)

MCET 344 Dynamics (3 Units)

Prerequisites: MCET 243, MATH 255, and COET 125. Introduces particle dynamics, displacement, velocity, and acceleration of constrained rigid bodies in plane motion. Kinetics of particles and rigid bodies, work and energy, mechanical vibration. (Formerly 2920:344)

MCET 346 Mechanical Design III (4 Units)

Prerequisites: MCET 245 and MCET 344. Continuation of design of mechanical components: gears, bearings, shafts, springs, and fasteners. Special topics presented will be coordinated with assigned design projects. (Formerly 2920:346)

MCET 365 Applied Thermal Energy II (3 Units)

Prerequisites: MATH 255, MCET 249, and MCET 251. Review and application of basic thermodynamic principles used in designing automotive engines and refrigeration equipment. Introduction to heat transfer, heating, ventilation, and air conditioning. (Formerly 2920:365)

MCET 370 Plastics Design & Process (3 Units)

Prerequisite: CHEM 151. Introduction to structure and properties of polymers, selection based on properties and cost, design of products and tools, basic principles of the major processes. (Formerly 2920:370)

MCET 401 Mechanical Engineering Technology Senior Design Project I (2 Units)

Prerequisites: MATH 356, MCET 142, MCET 245, MCET 249, MCET 251, MCET 344, and EEET 242. Detailed senior design project including design, feasibility, timeline and cost analysis. Social and professional responsibilities, professional certification, lifelong learning, and career opportunities. (Formerly 2920:490)

Gen Ed: Capstone

MCET 402 Mechanical Engineering Technology Senior Design Project II (3 Units)

Prerequisites: MCET 310 and MCET 401. Pre/Corequisite: MCET 405. Continuation of detailed senior design project. Final design and implementation. Emphasizes creative and technical design through group or individual projects. Application of project management techniques alongside formal design, implementation, and testing processes to address multidisciplinary engineering problems. (Formerly 2920:402)

MCET 405 Introduction to Industrial Machine Control (3 Units)

Prerequisite: EEET 370. Principles and design of industrial machine control systems. Application oriented study of typical control devices. Utilization of programmable controllers as the system logic controllers. (Formerly 2920:405)

MCET 410 Fundamentals of Engineering Exam Preparation (2 Units)

Pre/Corequisite: MCET 401. Preparation for the Fundamentals of Engineering Exam.

MCET 446 Mechanical Design IV (3 Units)

Prerequisite: MCET 346. Continuation of Mechanical Design III. Theories and techniques for analysis of mechanical components such as springs, fasteners, and bolted/welded joints. Application of these concepts in the analysis and design of complex mechanical systems.

MCET 470 Plastics Processing & Testing (2 Units)

Prerequisite: MCET 370 or permission. Use of basic polymer testing methods. Setup and operation of modern molding and extrusion equipment. Basic troubleshooting procedures. Study of processing effects on final properties. (Formerly 2920:470)

MCET 475 Advanced Materials Testing and Characterization (3 Units)

Prerequisites: MCET 142 and MCET 470. Exploration of materials characterization techniques. Microscopic and spectroscopic methods for analyzing materials; relationship between structure and properties in both metals and plastics. Characterization techniques, testing and evaluation methods, heat treatment processes for steel, diffusion phenomena in metals, and the flow behavior of molten plastics.

MCET 497 Senior Honors Project in Mechanical Engineering Technology (1-3 Units)

Prerequisites: Senior standing in Honors Program, permission of area honors preceptor, and major in mechanical technology. Independent research leading to completion of senior honors thesis or other original work. (May be repeated for a total of six credits) (Formerly 2920:497)

MCET 498 Independent Study in Mechanical Engineering Technology (1-4 Units)

Prerequisite: Permission. Directed study in a special field of interest chosen by the student in consultation with the instructor. (May be repeated for a total of six credits). (Formerly 2920:498)