



Mechanical Engineering Technology *Associate/Bachelor of Science*

Accredited by the Technology Accreditation Commission (TAC) of the Accreditation Board for Engineering and Technology (ABET)
111 Market Pl., Suite 1050, Baltimore, MD 21202 Telephone (410) 347-7700

Mechanical Engineering Technology deals with the generation, transmission, and utilization of mechanical and fluid energy as well as the design and production of tools and manufactured items. This program is intended to prepare specialists in the development of machines and products, in production processes, in the installation/upgrade of machines, and in solving engineering problems.

Graduates of the program accept jobs as laboratory, production or design technicians, engineering aides, production engineering assistants, and technical sales representatives. With additional experience, promotion to positions such as manufacturing, production and maintenance engineers, production supervisors, machine and tool designers, technical buyers, production expeditors and cost estimators is possible. Graduates who complete an A.S. degree in Mechanical Engineering Technology can also work toward the B.S. degree in MET in New Albany.

Credit Hours Required for the Associate of Science: 67

First Semester	Second Semester
(3) CGT 110 Technical Graphics Communication (3) MET 143 Materials & Processes I (3) ENG-W131 English Composition (IUS) (5) MATH-M215 Calculus for math majors (IUS) (3) MET 160 Computational Analysis Tools in MET (17)	(3) MET 144 Materials & Processes II (3) MET 102 Product Design and Specifications (3) MET 111 Applied Statics (3) ECET 214 Electricity Fundamentals (5) MATH-M216 Calculus II (IUS) (17)
Third Semester	Fourth Semester
(4) MET 211 Applied Strength of Materials (3) MET 213 Dynamics (3) MET 220 Heat & Power (3) MET 245 Manufacturing Systems (5) PHYS-P221 Physics I (calculus-based IUS) (18)	(3) MET 214 Machine Elements (3) MET 230 Fluid Power (5) PHYS-P202 Physics II (IUS) (3) Humanities/Soc. Science Elective – ECON-E100 (IUS) (3) SPCH-S121 Public Speaking (IUS) (17)

Credit Hours Required for the Bachelor of Science: 127

Fifth Semester	Sixth Semester
(3) MET 320 Applied Thermodynamics (5) CHEM-C101 & C121 Elementary Chemistry/lab (IUS) (3) CSCI-A201 Computer Programming I (IUS) (3) MATH 311 Calculus for math majors (IUS) (3) Technology and Society Elective (IUS) (17)	(3) MET 313 Applied Fluid Mechanics (3) MET 344 Materials II (3) MET 382 Controls & Instrumentation for Automation (3) MATH-K300 Statistics (IUS) (3) ECON-E200 Fundamentals of Economics (IUS) (15)
Seventh Semester	Eighth Semester
(3) MET 411 Finite Element Analysis (elective) (3) MET 317 Machine Diagnostics (elective) (3) OLS/MGMT Elective (3) Inter/Basic Science Selective (3) IET 451 Monetary Analysis (3) MATH 312 Calculus for math majors (IUS) (18)	(3) MET 345 Welding Technology (elective) (3) MET 451 Manufacturing Quality Control (elective) (3) SPCH-S229 Small Group Discussion (IUS) (3) Humanities/Social Science Elective (IUS) (3) ENG-W234 Technical Writing (IUS) (15)

Effective Fall 2008

MECHANICAL ENGINEERING TECHNOLOGY (MET) POS 2008

Course Descriptions

MET 102 Production Design and Specifications (3 cr.). Prerequisites: CGT 110 and MET 160. The design, evaluation, and documentation of engineering specifications required for manufacturability and assembly are introduced. Emphasis is on CAD-based details, assemblies, design layouts, equipment installations and related industrial practices.

MET 111 Applied Statics (3 cr.). Prerequisites: MATH-M125/M 126, and MET 160. Force systems, resultants and equilibrium, trusses, frames, beams, and shear moments in beams are studied.

MET 143 Materials & Processes I (3 cr.). An overview of structures, properties, & applications of metals, polymers, ceramics, and composites commonly used in industry is presented. Problem-solving skills are developed in the areas of materials selection, evaluation, measurement, & testing.

MET 144 Materials & Processes II (3 cr.). Prerequisite: MET 143. Basic casting, forming, welding, & joining processes are surveyed. The course emphasizes the selection and application of various processes.

MET 160 Computational Analysis Tools in MET (3 cr.). The skills needed to solve technical problems in Mechanical Engineering Technology are developed. Instruction is given in analytical problem-solving techniques. The electronic calculator, the factor-label method of unit conversions & engineering graphs, are used to solve problems.

MET 211 Applied Strength of Materials (4 cr.). Prerequisites: MET 111 and MET 160; Corequisite: MATH 221. The principles of strength, stiffness, and stability are introduced and applied primarily to mechanical components.

MET 213 Dynamics (3 cr.). Prerequisite: MET 111 Corequisite: MATH 221. Kinematics and kinetics principles of rigid-body dynamics are introduced. Emphasis is on the analysis of bodies in plane motion.

MET 214 Machine Elements (3 cr.). Prerequisites: MET 160, MATH 221 and MET 213. The methods developed in statics, dynamics, and strength of materials are applied to the selection of basic machine components. The fundamental principles required for selection of individual elements that compose a machine are developed. Selected topics are included as computer exercises.

MET 220 Heat/Power (3 cr.). Prerequisites: MET 160, PHYS-P201; Corequisite: MATH 221. Heat/power is an introduction to the principles of thermodynamics and heat transfer. Basic thermodynamic processes are used to evaluate the performance of energy-based systems such as internal combustion engines, power plants, refrigeration equipment, and heat exchangers.

MET 230 Fluid Power (3 cr.). Prerequisites: MET 111 or PHYS-P201, and MET 160. This course consists of the study of incompressible fluid statics and dynamics as applied to hydraulic and pumps, motors, transmissions, and controls.

MET 245 Manufacturing Processes II (3 cr.). Prerequisites: MET 143, MATH-M125 or M126 or MET 160. This course surveys the manufacturing processes and tools commonly used to convert cast forged, molded and wrought materials into finished products. Includes the basic mechanisms of material removal, measurement, quality control, assembly processes, safety, process planning & automated manufacturing.

MET 313 Fluid Mechanics (3 cr.). Prerequisites: MET 230, MATH 221. The fundamental principles of fluid mechanics are developed, including properties of fluid pressure, hydrostatics, dynamics of fluid flow, friction losses, and sizing of pipes. Emphasis is on system design and system/pump matching.

MET 317 Machine Diagnostics (3 cr.) A broad spectrum of equipment behavior is introduced through the study of four major operating parameters: vibration, noise, temperature, and lubrication. Emphasis is placed on measurement and analysis of data using diagnostic instrumentation and techniques found in modern process and manufacturing plants.

MET 320 Applied Thermodynamics (3 cr.). Prerequisites: MET 220, MATH 221. Following a review of fundamental concepts, advanced power and refrigeration cycles are analyzed. Applications such as gas mixtures, air-vapor mixtures and application of combustion to power cycles are presented.

MET 344 Materials II (3 cr.). Prerequisites: MET 143 and CHEM-C101/121. Metals and polymers are studied. Topics include the bonding of atoms; the structures of crystals and polymers; the coldworking, alloying and heat treating of metals; and the physical behavior of plastics. Course emphasis is on the development and control of material properties to meet engineering requirements and specifications.

MET 345 Welding Technology (3 cr.) Welding processes, equipment, and weldments are studied. An in-depth look is taken into welding processes, welding problems, quality control, inspection methods, welding filler metals, welding equipment, and weldment design.

MET 382 Controls and Instrumentation of Automation (3 cr.). Prerequisites: MATH-M125/126, CSCI-A201, and PHYS-P202. Study of the procedures and techniques essential to industrial measurement and transmission of data is provided in the areas of machine control, process control, and automated testing. Concepts of hysteresis, repeatability, weighted signals, span, suppression, range, and closed loop control are emphasized.

MET 411 Finite Elemental Method (3 cr.) The finite element method is introduced, with emphasis on modeling and interpretation of results. Linear static problems are solved using commercial FEA software, and FEA results are verified through laboratory tests and/or theoretical calculations. Topics include trusses, frames, plane stress/strain, torsion, 3D structures, buckling, and natural frequency/mode shape analyses.

MET 451 Manufacturing Quality Control (3 cr.). Quality control practices used in manufacturing industries; management, statistical control charts, reliability, sampling plans, economics, computer methods, and test equipment are presented and applied.

CGT 110 Technical Graphics Communications (3 cr.). Corequisite: MATH-M125/126. This course is an introduction to the graphic language used to communicate design ideas using Computer-aided Drafting (CAD). Topics include multi-view drawings, dimensioning practices, and section views.

ECET 214 Electricity Fundamentals (3 cr.). (Not open to EET students.) Prerequisite: MATH-M125/126. An introduction to elemental electrical components and their characteristics, basic electrical components and their characteristics, basic electrical circuit theory and use of basic laboratory test equipment, electrical motors, and industrial motor controls.