MECHANICAL ENGINEERING AND RELATED TECHNOLOGY (MERT)

MERT 12000  ENGINEERING DRAWING  3 Credit Hours
Engineering drawing principles and techniques: orthographic projection, sketching, sections, auxiliary views, dimensioning and conventional practices.
Prerequisite: None.
Schedule Type: Laboratory, Lecture, Combined Lecture and Lab
Contact Hours: 2 lecture, 2 lab
Grade Mode: Standard Letter

MERT 12001  COMPUTER-AIDED DESIGN  3 Credit Hours
Introduces 3D modeling techniques to design and draft mechanical components and assemblies.
Prerequisite: MERT 12000.
Schedule Type: Combined Lecture and Lab
Contact Hours: 2 lecture, 2 lab
Grade Mode: Standard Letter
Attributes: CTAG Mechanical Engineering Technology, TAG Engineering Technology

MERT 12004  MANUFACTURING PROCESSES  3 Credit Hours
Introduces students to the various manufacturing processes such as extrusion, molding, forging, casting, stamping, piercing, joining and finishing. Investigates the various ways parts are made from the vast array of materials available.
Prerequisite: None.
Schedule Type: Combined Lecture and Lab
Contact Hours: 2 lecture, 2 lab
Grade Mode: Standard Letter
Attributes: CTAG Mechanical Engineering Technology, TAG Engineering Technology

MERT 12005  PROPERTIES OF MATERIALS  3 Credit Hours
Covers the chemical and physical properties of engineering materials such as metals (ferrous and non-ferrous), polymers, ceramics and composites. Students learn the mechanical and physical properties of materials, and the effects that manufacturing processes have on the material's properties.
Prerequisite: None.
Schedule Type: Combined Lecture and Lab
Contact Hours: 2 lecture, 2 lab
Grade Mode: Standard Letter
Attributes: TAG Engineering Technology

MERT 21096  INDIVIDUAL INVESTIGATION IN MECHANICAL ENGINEERING TECHNOLOGY  1-4 Credit Hours
(Repeatable for credit) Independent in depth research of a mechanical engineering technology topic supervised and coordinated by an engineering technology faculty member.
Prerequisite: Permission.
Schedule Type: Individual Investigation
Contact Hours: 1-4 other
Grade Mode: Standard Letter

MERT 22003  COMPUTER-AIDED TOOL DESIGN  3 Credit Hours
Tool design practices and procedures including materials, commercial standards, cutting tools, drill jigs, fixtures, dies and gauges using computer-aided design.
Prerequisite: MERT 12001.
Schedule Type: Lecture
Contact Hours: 3 lecture
Grade Mode: Standard Letter

MERT 22005  STATICS  3 Credit Hours
Basic vector mechanics, calculation of reactions from applied forces, drawing free body diagrams, working with equations of equilibrium, analysis of simple structures, calculating mass properties and forces due to friction.
Prerequisite: None.
Corequisite: MATH 11022.
Schedule Type: Lecture
Contact Hours: 3 lecture
Grade Mode: Standard Letter
Attributes: TAG Engineering Technology

MERT 22007  STRENGTH OF MATERIALS  3 Credit Hours
Covers taking the stresses induced into members due to applied loading, and coupled with mass properties of the sections, designing members to safely carry the loads. Types of stresses considered are tensile, compressive, shear, bending, torsional and combined.
Prerequisite: MERT 22005.
Schedule Type: Lecture
Contact Hours: 3 lecture
Grade Mode: Standard Letter
Attributes: TAG Engineering Technology

MERT 22009  ENGINEERING TECHNOLOGY PROJECT  2 Credit Hours
A practical, hands-on experience which emphasizes the integration of analytical and design skills acquired in companion courses. Students will work in teams under direct faculty supervision. Engineering communication such as reports and oral presentations are covered. The capstone design projects include creative and challenging projects within the engineering discipline.
Prerequisite: None.
Corequisite: EERT 22014.
Schedule Type: Lecture
Contact Hours: 1 lecture, 2 lab
Grade Mode: Standard Letter

MERT 22012  FLUID POWER  3 Credit Hours
Fluid properties, kinematics of fluid flow, momentum, viscosity, conservation of energy in fluid flow, industrial hydraulics and gas laws.
Prerequisite: None.
Schedule Type: Lecture
Contact Hours: 3 lecture
Grade Mode: Standard Letter
Attributes: TAG Engineering Technology

MERT 22095  SPECIAL TOPICS IN MECHANICAL ENGINEERING TECHNOLOGY  1-3 Credit Hours
(Repeatable for credit) Special topics in mechanical engineering technology.
Prerequisite: Permission.
Schedule Type: Lecture
Contact Hours: 1-3 lecture
Grade Mode: Standard Letter
MERT 32004  MACHINE DESIGN  3 Credit Hours
This course provides the concepts, procedures, data, and decision analysis techniques necessary to design machine elements commonly found in mechanical devices and systems.
Prerequisite: MERT 12001 and MERT 22007.
Schedule Type: Lecture
Contact Hours: 3 lecture
Grade Mode: Standard Letter

MERT 34002  ADVANCED SOLID MODELING  3 Credit Hours
Advance parametric solid modeling using advanced software (CREO) to create and analyze solid models. Includes model creation using advanced features, introduction to FEA simulation, and manufacturing simulations.
Prerequisite: MERT 12001.
Schedule Type: Lecture
Contact Hours: 3 lecture
Grade Mode: Standard Letter

MERT 42000  THERMODYNAMICS FOR ENGINEERING TECHNOLOGY  3 Credit Hours
Includes the study of the first and second laws of thermodynamics with a detailed study of various types of heat engines. Additional topics include principles of heat transfer and energy management.
Prerequisite: PHY 13001 and PHY 13002 or PHY 13011 and PHY 13012.
Schedule Type: Lecture
Contact Hours: 3 lecture
Grade Mode: Standard Letter

MERT 43001  DYNAMICS FOR ENGINEERING TECHNOLOGY  3 Credit Hours
Kinematics and kinetics of particles; Newton’s laws; energy and momentum methods; system of particles; kinematics and kinetics of planar motions of rigid bodies; plane motion of rigid bodies; mechanical vibrations.
Prerequisite: PHY 13002 or PHY 13012.
Schedule Type: Lecture
Contact Hours: 3 lecture
Grade Mode: Standard Letter