# Mechanical Engineering and Related Technology (MERT)

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Credits</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>MERT 12000</td>
<td>Engineering Drawing</td>
<td>3</td>
<td>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.</td>
</tr>
<tr>
<td>MERT 12001</td>
<td>Computer-Aided Design</td>
<td>3</td>
<td>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.</td>
</tr>
<tr>
<td>MERT 12004</td>
<td>Manufacturing Processes</td>
<td>3</td>
<td>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.</td>
</tr>
<tr>
<td>MERT 12005</td>
<td>Properties of Materials</td>
<td>3</td>
<td>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.</td>
</tr>
<tr>
<td>MERT 22003</td>
<td>Computer-Aided Tool Design</td>
<td>3</td>
<td>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.</td>
</tr>
<tr>
<td>MERT 22005</td>
<td>Statics</td>
<td>3</td>
<td>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.</td>
</tr>
<tr>
<td>MERT 22009</td>
<td>Engineering Technology Project</td>
<td>2</td>
<td>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.</td>
</tr>
<tr>
<td>MERT 22095</td>
<td>Special Topics in Mechanical Engineering Technology</td>
<td>1-3</td>
<td>(Repeatable for credit) Special topics in mechanical engineering technology. Prerequisite: Permission. Schedule Type: Lecture. Contact Hours: 1-3 lecture. Grade Mode: Standard Letter.</td>
</tr>
</tbody>
</table>

*Note: All courses are offered by the Mechanical Engineering and Related Technology (MERT) Department at Kent State University.*
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 advance 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