

OET 013– ENGINEERING MATERIALS

<i>Credit Hour Recommendation:</i> 3 Semester Hours
<i>Pre-Requisite:</i> None
<i>Related TAG:</i> Mechanical/Manufacturing Engineering Technology
<i>General Course Description:</i> This course covers the basic physical and chemical properties of materials, structures, and technical information required to select appropriate materials and treatment processes that could be used in engineering applications. Also covered are the limitations and production processes of material such as plastics, metals, ceramics, composites, cemented carbides, and other materials and variety of testing methods used for selection and specifying design specifications. Learning outcomes are achieved through various in class and laboratory experiences.
Student learning outcomes marked with an asterisk (*) are essential and must be met.
1. Describe how engineering materials including metals, polymers, ceramics, and composites are related in origin and structural characteristics, such as crystal structure, organic composition and properties, basic chemistry and atomic structure.*
2. Explain the mechanical properties that must be reviewed when making materials selections including hardness, modulus of elasticity, tensile strength, yield strength, and shear strength.*
3. Describe how steels are made including alloying and primary processes, such as melting, casting, hot rolling, and cold rolling.*
4. Describe how modifying chemical compositions, cold working, and heat treatments alter material properties.*
5. Select the appropriate engineering materials based upon their properties.*

**MECHANICAL/MANUFACTURING ENGINEERING TECHNOLOGY TAG:
ENGINEERING MATERIALS
FACULTY PARTICIPANTS
August-September 2016**

Name	Institution
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