



<b>Program and Degree: BSc in Aerospace Engineering</b>	
<b>Course Description</b>	
<b>Course Title</b>	<b>Materials and Processes in Manufacturing</b>
<b>Prerequisites</b>	Non
<b>The course aims</b>	<p>Upon completion of this course the students will be able to:</p> <ol style="list-style-type: none"> <li>1. Understand the basic of terminologies in the materials and manufacturing processes.</li> <li>2. Understand the different types of materials, their properties and applications.</li> <li>3. Understand the behavior of materials under different loads and environmental conditions</li> <li>4. Understand the different processing and techniques and effects of these processes on the materials properties and behaviors</li> </ol>
<b>Contents</b>	<p>Review of chemical bonds and atomic and molecular properties of materials</p> <p>Atomic structure in solids, crystallization and all kinds of crystalline building materials, and non-crystalline materials</p> <p>Disorder in the solid structure: impurities, solid solution in metal, solid solution in compound, dislocation and defects and margins</p> <p>Different types of materials, their characteristics and properties.</p> <p>The nature of metals and alloys, equilibrium phase diagrams and heat treatment.</p> <p>Ferrous and nonferrous metals and alloys.</p> <p>Nonmetallic materials</p> <p>Material and process selection methods.</p>
<b>Duration</b>	<b>1 Semester (16 weeks)</b>
<b>Course Hours</b>	<b>3 hours/week</b>
<b>Course Type</b>	<b>Required</b>