



Arab Academy for Science, Technology & Maritime Transport  
College of Engineering & Technology  
Department of Basic and Applied Science

**University/Academy:** Arab Academy for Science, Technology & Maritime Transport  
**Faculty/Institute:** College of Engineering & Technology  
**Program:** B.Sc. Mechanical Engineering  
**Program:**

**Form No. (12)**  
**Course Specification**

**1- Course Data**

<b>Course Code:</b> <b>IM 112</b>	<b>Course Title:</b> <b>Manufacturing Technology</b>	<b>Academic Year/Level:</b> 1 <sup>st</sup> year / 2 <sup>nd</sup> semester	
<b>Specialization:</b>	<b>No. of Instructional Units</b>	<b>Lecture</b>	<b>Practical</b>
	<b>2 Credits</b>	<b>2hrs.</b>	<b>2hrs.</b>

**2- Course Aim**

This course is designed to introduce students to the basic knowledge of industrial and work organizations, importance of health and industries and work areas, and historical background on science, engineering, and technology; their origin and development..

**3- Intended Learning Outcome (ILO's)**

<b>a- Knowledge and Understanding</b>	<p>K3) Characteristics of engineering materials related to the discipline. Define different properties of engineering materials Define basic classification of metals and their effect on properties. Identify different types of polymers and their properties.</p> <p>K4) Principles of design including elements design, process and/or a system related to specific disciplines. Define properties required for different applications. Define casting concepts. Identify different casting techniques. Define the concepts of casting mold design and permanent mold casting. Define different bulk deformation processes and their applications. Define sheet metal forming processes. Define different machining processes. Define tool life concepts and different factors affecting tool life. Identify different types of welding operations and their applications. Define different plastic processing techniques. Define manufacturing concepts. Define basic classification for manufacturing processes.</p>
<b>b- Intellectual Skills</b>	
<b>c- Professional Skills</b>	

<b>d- General Skills</b>	
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**4- Course Content**

Lecture		
Wk	Hrs	
1	2	Introduction to manufacturing.
2	2	Physical and mechanical properties of materials.
3	2	Classification of materials, metals and their alloys.
4	2	Polymers and composites.
5	2	Metal casting
6	2	Metal casting (cont.), mold and riser design, die casting
7	2	7th Exam
8	2	Metal forming (Rolling, Extrusion & Drawing).
9	2	Metal forming (cont.), sheet metal work.
10	2	Machining operations.
11	2	Tool life and materials
12	2	12 <sup>th</sup> Exam
13	2	Joining operations
14	2	Shaping of plastics
15	2	. Revision.
16	2	Final Exam

**5-Teaching and Learning Methods**

<ol style="list-style-type: none"> <li>1. Lectures</li> <li>2. Tutorials</li> <li>3. Individual and group coursework</li> <li>4. Project group technical reports Individual and group projects</li> </ol>
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**6-Teaching and Learning Methods for Students with Special Needs**

<ol style="list-style-type: none"> <li>1. Consulting with lecturer during office hours</li> <li>2. Consulting with teaching assistant during office hours</li> <li>3. An academic supervisor is appointed for handicapped students. Constant follow ups are done for handicapped students after each assessment to evaluate their academic level of achievement.</li> </ol>
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**7- Student Assessment**

<b>a- Procedures used:</b>	Written examinations to assess the Intended learning outcomes. Continuous assessment (reports, discussions, etc.....).
<b>b- Schedule:</b>	Assessment 1: 7 <sup>th</sup> Week Written Exam Assessment 2: 12 <sup>th</sup> Week Written Exam Assessment 3: Continuous Assessments Assessment 4: 16 <sup>th</sup> Week Final Written Exam

<b>c- Weighing of Assessment:</b>	7 <sup>th</sup> Week Examination : 30 % 12 <sup>th</sup> Week Examination: 20 % Final-term Examination: 40 % Oral Examination : 5 % Semester Work : 5 % Total : 100%
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**8- List of References:**

<b>a- Course Notes</b>	
<b>b- Required Books (Textbooks)</b>	T.F. Waters and F. Waters, "fundamentals of Manufacturing for Engineers", Taylor & Francis, Latest Edition.
<b>c- Recommended Books</b>	-Roy A. Lindberg, 'Process and materials of manufacturing', Allen and Bacon, Latest edition -E. Paul DeGarmo, et.al, "Materials and process in manufacturing", Prentice Hall, latest edition. -L.E. Doyle, et.al, "Manufacturing process and materials for engineers", Prentice Hall, latest edition.
<b>d- Periodicals, Web Sites, ..., etc.</b>	

**Course coordinator:**

**Program Manager:**