Course Specifications

University: Benha University  Faculty: High Institute of Technology

Course specifications
Programme(s) on which the course is given: Mechanical Power Engineering
Major or minor element of programmes
Department offering the programme: Mechanical Power Engineering
Department offering the course: Mechanical Production Engineering
Academic year / Level: year 3 Mechanical Power Engineering
Date of specification approval

A- Basic Information
Title: Manufacturing Technology  Code: M^62
Credit Hours: -  Lecture: 2
Tutorial: 2  Practical: -  Total: 4

B- Professional Information

1 - Overall aims of course
By the end of the course the students will be able to:

- Demonstrate knowledge and understanding of facilities layout, materials handling systems and inventory control,

- get a basic idea of solidification and different casting processes, mould and core-making, melting and melt treatment,

- deal with casting quality control methods,

- Recognize and demonstrate the different machining processes (conventional and non conventional) and metal forming processes,

- Demonstrate knowledge and understanding of theoretical analysis of metal forming,

- Recognize different types of metal forming processes.

Student shall attain the above mentioned objectives through lectures, tutorial for problem solving and laboratory for experiments and microscopic examinations

2- Intended learning outcomes of course (ILOs)
a. Knowledge and understanding:
   a.1 Define the industrial engineering and its concern
   a.2 Describe current casting and forming technologies
   a.3 Understand essential facts, fundamentals, concepts, principles and theories relevant to manufacturing technology
   a.4 Explain hot and cold working and metal forming.

b. Intellectual skills
   b.1 Analyze engineering problems relevant to industrial engineering,
   b.2 Solve mechanical and product design in hot and cold working,
   b.3 Creatively solve problems of joining methods.

c- Professional and practical skills
   c.1 Employ computational facilities, measuring instruments, workshops and laboratories equipment to design experiments and collect, analyze and interpret results.
   c.2 Operate and maintain different production machines

3- Contents

<table>
<thead>
<tr>
<th>Topic</th>
<th>No. of Hours</th>
<th>Lecture</th>
<th>Tutorial/Practical</th>
</tr>
</thead>
<tbody>
<tr>
<td>Introduction to industrial engineering (workshop layout and design, factory planning and inventory control)</td>
<td>8</td>
<td>4</td>
<td>4</td>
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<tr>
<td>Casting technology (melting, pouring, solidification, processes, cleaning, defects and inspection)</td>
<td>16</td>
<td>8</td>
<td>8</td>
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<tr>
<td>Forming technology</td>
<td>4</td>
<td>2</td>
<td>2</td>
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<tr>
<td>Hot and cold working</td>
<td>4</td>
<td>2</td>
<td>2</td>
</tr>
<tr>
<td>Forming processes (rolling, drawing, extrusion, spinning)</td>
<td>16</td>
<td>8</td>
<td>8</td>
</tr>
<tr>
<td>Joining technology (fastening, riveting, soldering and prizing, welding, adhesive bonding)</td>
<td>12</td>
<td>6</td>
<td>6</td>
</tr>
</tbody>
</table>

4- Teaching and learning methods
   4.1 - Lectures
   4.2 - Problem solving sessions
4.3 - Laboratories

5- Student assessment methods

5.1 Written exam to assess ILO a1, a2, a3, a4, b1, b2, b3, c1
5.2 problem solving to assess ILO a3, b1
5.3 labs to assess ILO c3
5.4 Report writing to assess ILO a3, b2, c1
5.5 Oral exam to assess ILO b2, b3

Assessment schedule

<table>
<thead>
<tr>
<th>Assessment</th>
<th>Written exam</th>
<th>Week</th>
</tr>
</thead>
<tbody>
<tr>
<td>Assessment 1</td>
<td>Written exam</td>
<td>5</td>
</tr>
<tr>
<td>Assessment 2</td>
<td>Written exam</td>
<td>10</td>
</tr>
<tr>
<td>Assessment 3</td>
<td>Practical exam</td>
<td>15</td>
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Weighting of assessments

<table>
<thead>
<tr>
<th>Assessment</th>
<th>Weightage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Final-term examination</td>
<td>60 %</td>
</tr>
<tr>
<td>Semester work</td>
<td>40 %</td>
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<tr>
<td>Total</td>
<td>100 %</td>
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6- List of references

6.1- Course notes

Course notes of manufacturing technology

6.2- Essential books (text books)


6.3- Recommended books


6.4- Periodicals, Web sites, ... etc

http://en.wikipedia.org/wiki/Metal_forming,
http://en.wikipedia.org/wiki/Casting

7- Facilities required for teaching and learning

Lecture rooms
Classrooms for problem solving sessions
Laboratories for foundry, sand testing, and materials testing
Text books, handbooks and standard specifications availability in student library

Course coordinator: Prof. Adel Omar
Head of Department: Prof. Sameh Nada
Date: / /