Course Specifications

University: Benha University  
Faculty: Benha Faculty of engineering

Course specifications
Programme(s) on which the course is given: Mech. Eng.  
Major or minor element of programmes:
Department offering the programme: Mech. Eng.  
Department offering the course: Mech. Eng.  
Academic year / Level: 2nd Year  
Date of specification approval: 

A- Basic Information
Title: Strength & Testing of Materials  
Code: M261  
Credit Hours:  
Lecture: 3  
Tutorial: 1  
Practical: 1  
Total: 5

B- Professional Information
1 - Overall aims of course
- Provide the student with a clear and through presentations of both theory and applications of the fundamental principles of mechanics of materials.
- Explain the behavior of materials under loads (principles of strength and deformation)
- Expose the student to important mechanical properties of materials & methods of testing to acquire these properties.

2- Intended learning outcomes of course (ILOs)
a. Knowledge and understanding:
   a.7
   a.9

b. Intellectual skills
b.4
b.5
c- Professional and practical skills
c.6
d- General and transferable skills
d.4
3- Contents

<table>
<thead>
<tr>
<th>Topic</th>
<th>No. of Hours</th>
<th>Lecture</th>
<th>Tutorial/P Practical</th>
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<tbody>
<tr>
<td>Why this course?</td>
<td>1</td>
<td>1</td>
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<tr>
<td>Loads &amp; Reactions</td>
<td>2</td>
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<tr>
<td>Stress &amp; Strain</td>
<td>5</td>
<td>3</td>
<td>2</td>
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<tr>
<td>Material Property Testing (Tension &amp; Shear)</td>
<td>5</td>
<td>3</td>
<td>2</td>
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<tr>
<td>Axial Stress &amp; Elongation of Rods</td>
<td>5</td>
<td>3</td>
<td>2</td>
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<tr>
<td>Torsion &amp; Twist of circular shafts</td>
<td>5</td>
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<td>2</td>
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<tr>
<td>Bending Stress</td>
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<td>Transverse Shear &amp; Shear Flow</td>
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<td>3</td>
<td>2</td>
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<tr>
<td>Combined Stresses</td>
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<td>3</td>
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<tr>
<td>Mohr’s Circle</td>
<td>5</td>
<td>3</td>
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<td>Deflection of Beams</td>
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<td>Statically undetermined Structures</td>
<td>5</td>
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<tr>
<td>Non Destructive Testing of Materials</td>
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<td>Applications</td>
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4- Teaching and learning methods

4.1- Lecture class.
4.2- Tutorial.
4.3 Lab. Experiments.

5- Student assessment methods
5.1 Written tests to assess Understanding & knowledge
5.2 Assignments to assess Ability to solve problems & analyze results independently.
5.3 Lab experiments to assess Understanding & Ability to acquire, presental experimental data

Assessment schedule

Assessment 1 Why this course? Week 1
Assessment 2 Loads & Reactions Week 1
Assessment 3 Stress & Strain Week 2
Assessment 4 Material Property Testing (Tension & Shear) Week 3
Assessment 5 Axial Stress & Elongation of Rods Week 4
Assessment 6 Torsion & Twist of circular shafts Week 5
Assessment 7 Bending Stress Week 6
Assessment 8 Transverse Shear & Shear Flow Week 7
Assessment 9 Mid. Semester Test & Applications Week 8
Assessment 10 Combined Stresses Week 9
Assessment 11 Mohr’s Circle Week 10
Assessment 12 Deflection of Beams Week 11
Assessment 13 Statically undetermined Structures Week 12
Assessment 14 Non Destructive Testing of Materials Week 13
Assessment 13 Applications Week 14
Assessment 14 Applications & Lab. Final exam. Week 15

Weighting of assessments

<table>
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<tr>
<th>Assessment</th>
<th>Percentage</th>
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<tr>
<td>Mid-term examination</td>
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<tr>
<td>Final-term examination</td>
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<tr>
<td>Oral examination</td>
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<tr>
<td>Practical examination</td>
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<tr>
<td>Semester work</td>
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<tr>
<td>Other types of assessment</td>
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</tr>
<tr>
<td>Total</td>
<td>100%</td>
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Any formative only assessments
6- List of references

6.1- Course notes

6.2- Essential books (text books)

6.3- Recommended books
All Books Covering the Subject and Available in B_HIT Library

6.4- Periodicals, Web sites … etc

7- Facilities required for teaching and learning
Material Testing Labs.

Course coordinator:
Head of Department:
Date: / /