

## 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: 2<sup>nd</sup> 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**

Topic	No. of Hours	Lecture	Tutorial/Practical
Why this course?	1	1	-
Loads & Reactions	2	2	2
Stress & Strain	5	3	2
Material Property Testing (Tension & Shear)	5	3	2
Axial Stress & Elongation of Rods	5	3	2
Torsion & Twist of circular shafts	5	3	2
Bending Stress	5	3	2
Transverse Shear & Shear Flow	5	3	2
Combined Stresses	5	3	2
Mohr's Circle	5	3	2
Deflection of Beams	5	3	2
Statically undetermined Structures	5	3	2
Non Destructive Testing of Materials	5	3	2
Applications	5	3	2
Applications	5	3	2

**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, present experimental data

### Assessment schedule

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

### Weighting of assessments

Mid-term examination	10%
Final-term examination	60%
Oral examination	10%
Practical examination	10%
Semester work	10%
Other types of assessment	0 %
Total	100 %
Any formative only assessments	

**6- List of references**

6.1- Course notes

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6.2- Essential books (text books)

Hebbeler, R.C., "Mechanics of Materials", Prentice Hall International Edition,

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6.3- Recommended books

All Books Covering the Subject and Available in BHIT Library

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6.4- Periodicals, Web sites ... etc

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**7- Facilities required for teaching and learning**

**Material Testing Labs.**

**Course coordinator:**

**Head of Department:**

**Date: //**