COURSE SPECIFICATIONS (2010-2011)

Benha University    Faculty of Engineering at Shobra    Mechanical Engineering Department

A- Basic Information

Course Title: Stress Analysis
Lecture: 3    Tutorial: 2    Practical: 2
Total: 5

Program on which the course is given: B.Sc. Mechanical Engineering (Power)
Major or minor element of program: Major
Department offering the program: Mechanical Engineering Department
Department offering the course: Mechanical Engineering Department
Academic year / level: First Year / Second Semester
Date of specifications approval: 10/5/2006

B- Professional Information

1- Overall aims of course:
This decision aims to give students the skills of stresses analysis and resistance of material.

2- Intended learning outcomes of course (ILOs)
By completion of the course, the student should be able to:

a- Knowledge and Understanding
a.3) Characteristics of engineering materials related to discipline.
a.4) Principles of design including elements design, process and/or a system related to specific disciplines.

b- Intellectual Skills
b.3) Think in a creative and innovative way in problem solving and design.
b.13) Evaluate mechanical power and energy engineering design, processes and performances and propose improvements.

C- Professional and Practical Skills
c.3) Create and/or re-design a process, component or system, and carry out specialized engineering designs.
c.6) Use a wide range of analytical tools, techniques, equipment, and software packages pertaining to the discipline and develop required computer programs.

D- General and Transferable Skills
d.1) Collaborate effectively within multidisciplinary team.
d.2) Work in stressful environment and within constraints.
d.3) Communicate effectively
d.6) Effectively manage tasks, time, and resources.

3- Contents

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<tr>
<th>Topic No.</th>
<th>Topic</th>
<th>Weeks</th>
<th>ILO’s</th>
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## Course Specifications (2010-2011)

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<tr>
<th>Course Title</th>
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<tbody>
<tr>
<td>1</td>
<td>Equilibrium analysis of the simple mechanical elements, the normal forces, the shearing forces and the shape of torsional torque.</td>
<td>2</td>
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<tr>
<td>2</td>
<td>Stresses in the elastic loaded beams with a simple loads.</td>
<td>3</td>
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<tr>
<td>3</td>
<td>Axial loading-bending and torsion-rigidity-elastic energy.</td>
<td>2</td>
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<tr>
<td>4</td>
<td>Elastic beams stresses in case of Composite loading</td>
<td>2</td>
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<td>5</td>
<td>Stresses in two dimensions.</td>
<td>3</td>
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<tr>
<td>6</td>
<td>Applications in simple mechanical elements.</td>
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<td>7</td>
<td><strong>Total</strong></td>
<td><strong>14 weeks</strong></td>
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### 4- Teaching and Learning Methods

- Lectures
- Practical training / laboratory
- Seminar / workshop
- Class activity
- Case study
- Assignments / homework

### 5- Student Assessment Methods

- Assignments to assess knowledge and intellectual skills.
- Quiz to assess knowledge, intellectual and professional skills.
- Mid-term exam to assess knowledge, intellectual, professional and general skills.
- Oral exam to assess knowledge and intellectual skills.
- Final exam to assess knowledge, intellectual, professional and general skills.

### Assessment Schedule

- Assessment 1 on weeks 2, 5, 9, 11
- Assessment 2 Quizzes on weeks 4, 6, 10, 12
- Assessment 3 Mid-term exam on week 8
- Assessment 4 Oral Exam on week 14
- Assessment 5 Final exam on week 15

### Weighting of Assessments

- 05% Home assignments
- 05% Quizzes
- 10% Mid-term examination
- 20% Oral examination
- 60% Final-term examination
- 100% Total
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6- List of References
   Course notes
   Essential books
      Alexander Blake, "Material Stress Analysis in Engineering Design", 2nd Edition,
      Revised and Expanded, MSRCEL DEKKER, 1990.
   Recommended books
      www.eulc.edu.eg

7- Facilities required for teaching and learning
   Lecture room equipped with overhead projector
   Presentation board, computer and data show
   Laboratory

Course coordinator:  Prof. Dr. Maher Higazzy
Course instructor:    Prof. Dr. Fouad helmy
Head of Department:  Prof. Dr. Maher Hegazy  Date: December 5, 2011