Course Specifications of 
Structural Mechanics - C 221

University: Benha
Faculty: Benha Faculty of Engineering

Course specifications
Programme(s) on which the course is given: Structural Engineering & Utilities Engineering

Major or minor element of programmes: N.A.
Department offering the programme: Civil Engineering
Department offering the course: Civil Engineering
Academic year / Level: 2nd year – 1st term
Date of specification approval: / /2009

A- Basic Information
Title: Structural Mechanics Code: C 221
Credit Hours: N.A. 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:
- Understand the basics of stability of structures and differentiate between stable and unstable systems.
- Determine of the Internal Force Diagrams for the statically determinate structures (Beams, Frames, Trusses, Arches) under applied static loads.
- Determine of the influence lines diagrams for statically determined structures (beams, frames, trusses).
- Provide the foundation for other design courses such as design of reinforced concrete structures or steel structures.

2- Intended learning outcomes of course (ILOs)
a. Knowledge and understanding:
a.1 Understand various basic sciences related to the course including equations of stability and equilibrium of forces.

a.2 Recognizing the fundamentals required to determine the diagrams for the straining actions of determinate linear structural problems (Beams, Frames, Trusses).

b. Intellectual skills

b.1 Ability to analyze the engineering problems.

b.2 Ability to derive different solution alternatives for the engineering problems.

b.3 Ability to assess the obtained results accuracy.

c- Professional and practical skills

c.1 Ability to handle different types of structures.

c.2 Ability to handle different structural systems.

d- General and transferable skills

d.1 Ability to practice team work and present results.

3- Contents

<table>
<thead>
<tr>
<th>Topic</th>
<th>No. of Hours</th>
<th>Lecture</th>
<th>Tutorial/Practical</th>
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<tbody>
<tr>
<td>Review of plane static's</td>
<td>4</td>
<td>2</td>
<td>2</td>
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<tr>
<td>Types of loads and supports</td>
<td>4</td>
<td>2</td>
<td>2</td>
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<tr>
<td>Stability of structures</td>
<td>4</td>
<td>2</td>
<td>2</td>
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<tr>
<td>Calculations of Reactions</td>
<td>4</td>
<td>2</td>
<td>2</td>
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<tr>
<td>Determination of internal forces in Beams</td>
<td>10</td>
<td>5</td>
<td>5</td>
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<tr>
<td>Determination of internal forces in Frames</td>
<td>10</td>
<td>5</td>
<td>5</td>
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<tr>
<td>Determination of internal forces in Arches</td>
<td>4</td>
<td>2</td>
<td>2</td>
</tr>
<tr>
<td>Determination of internal forces in Plane Trusses</td>
<td>8</td>
<td>4</td>
<td>4</td>
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<tr>
<td>Influence lines of Beams</td>
<td>4</td>
<td>2</td>
<td>2</td>
</tr>
<tr>
<td>Influence lines of Frames</td>
<td>4</td>
<td>2</td>
<td>2</td>
</tr>
<tr>
<td>Influence lines of Trusses</td>
<td>4</td>
<td>2</td>
<td>2</td>
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<tr>
<td>Total</td>
<td>60</td>
<td>30</td>
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4– Teaching and learning methods

4.1- Lectures.
4.2- Problems solution.

5- Student assessment methods
5.1 Sheets to assess Knowledge, understanding, skills.
5.2 Quizzes to assess Knowledge, understanding, skills.
5.3 Mid-term exam to assess Knowledge, understanding, skills.
5.4 Final Exam to assess Knowledge, understanding, skills.

Assessment schedule
Assessment 1 on weeks 1,2
Assessment 2 on weeks 3,4,5
Assessment 3 on weeks 6,7,8
Assessment 4 on weeks 9,10,11
Assessment 5 on weeks 12,13,14

Weighting of assessments
Mid-Term Examination 30%
Final-term Examination 60%
Sheets 5%
Quizzes 5%
Total 100%

Note: Attendance is expected at all class meetings. If anyone will not be able to attend a class he should inform the instructor beforehand in order to obtain assignments, etc. Make-up exams will not be given except under extreme circumstances. Students are responsible for every homework assignment. Students are encouraged to form study groups for homework and test preparation. Late sheets are not accepted.

6- List of references
6.1- Course notes

6.2- Essential books (text books)
- Problem oriented text in Structural analysis and Mechanics I, II Bazaraa, A. S.

6.3- Recommended books
- Structural Analysis, Part 1 Kassem, M. A.
- Theory of structures, Part I El-Dakhakhni, W. M.

6.4- Periodicals, Web sites, ... etc
- N.A.
7- Facilities required for teaching and learning
   - Laptop, data show, display screen.

Course coordinator: Assoc. Prof. Dr. Ayman A. Seleemah
Head of Department: Assoc. Prof. Dr. Ashraf Abou-Rayyan
Date: / / 2009