Description: Machine Stress

Subject Cat-Nbr Class Term Mode Units Campus
MEC 2404 21111 1, 2003 EXT 1.00 TWMBA

Academic Group: FOENS
Academic Org: FOES02
HECS Band: 2
ASCED Code: 030701

STAFFING
Examiner: Selvan Pather
Moderator: Chris Snook

PRE-REQUISITES
Pre-requisite: CIV1501

OTHER-REQUISITES
Pre-requisite: 70270

RATIONALE
This course develops at an appropriate level, theoretical and practical methods used in the design of machine and structural elements.

SYNOPSIS
All structures and machines must withstand the forces applied to them. A knowledge of stress and strain, failure mechanisms and deflection under load is necessary to analyse, design or modify machine elements, products and structures. This course develops at an appropriate level, theoretical and practical methods used in the design of machine and structural elements.

OBJECTIVES
On completion of this course, students should be able to:

- formulate basic concepts of mechanics of solids;
- apply the basic concepts of the mechanics of solids to develop techniques for the analysis of simple machines and structures;
- analyse stresses and deflections simple machines and structures.
### TOPICS

<table>
<thead>
<tr>
<th>Description</th>
<th>Weighting (%)</th>
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<tbody>
<tr>
<td>1. Stresses and deflections in beams</td>
<td>25.00</td>
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<td>2. Stresses and deflections in columns</td>
<td>10.00</td>
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<tr>
<td>3. Torsion and shafts</td>
<td>10.00</td>
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<td>4. Pipes and pressure vessels</td>
<td>10.00</td>
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<td>5. Principal stresses and theories of failure</td>
<td>20.00</td>
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<td>6. Fracture mechanics</td>
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<tr>
<td>7. Stress concentration and fatigue</td>
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</table>

### TEXT and MATERIALS required to be PURCHASED or ACCESSED:

Books can be ordered by fax or telephone. For costs and further details use the 'Book Search' facility at http://bookshop.usq.edu.au by entering the author or title of the text.


### REFERENCE MATERIALS

Reference materials are materials that, if accessed by students, may improve their knowledge and understanding of the material in the course and enrich their learning experience.

*SAA HB6-1999 Design Standards for Mechanical Engineering Students*, Standards Association of Australia,

### STUDENT WORKLOAD REQUIREMENTS

<table>
<thead>
<tr>
<th>ACTIVITY</th>
<th>HOURS</th>
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<tr>
<td>Directed Study</td>
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<tr>
<td>Examinations</td>
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<td>Private Study</td>
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ASSESSMENT DETAILS

<table>
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<tr>
<th>Description</th>
<th>Marks Out of</th>
<th>Wtg(%)</th>
<th>Required</th>
<th>Due Date</th>
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<td>0.00</td>
<td>Y</td>
<td>21 Mar 2003</td>
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<td>CMA 2</td>
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<td>CMA 3</td>
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<td>CMA 6</td>
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NOTES:

- Student Administration will advise students of the dates of their examinations during the semester.

IMPORTANT ASSESSMENT INFORMATION

1. Attendance requirements:
   There are no attendance requirements for this course. However, it is the students' responsibility to study all material provided to them or required to be accessed by them to maximise their chance of meeting the objectives of the course and to be informed of course-related activities and administration.

2. Requirements for students to complete each assessment item satisfactorily:
   To complete each of the assessment items satisfactorily, students must obtain at least 50% of the marks available (or at least a grade of C-) for each assessment item.

3. Penalties for late submission of required work:
   Not applicable.

4. Requirements for student to be awarded a passing grade in the course:
   To be assured of receiving a passing grade a student must achieve at least 50% of the available weighted marks for the summative assessment items.

5. Method used to combine assessment results to attain final grade:
   The final grades for students will be assigned on the basis of the weighted aggregate of the marks (or grades) obtained for each of the summative assessment items in the course.

6. Examination information:
   In an Open Examination, candidates may have access to any material during the examination except the following: electronic communication devices, bulky materials, devices requiring mains power and material likely to disturb other students.

7. Examination period when Deferred/Supplementary examinations will be held:
Any Deferred or Supplementary examinations for this course will be held during the examination period at the end of the semester of the next offering of this course.

8 University Regulations:
Students should read USQ Regulations 5.1 Definitions, 5.6. Assessment, and 5.10 Academic Misconduct for further information and to avoid actions which might contravene University Regulations. These regulations can be found at the URL: http://www.usq.edu.au/SECARIAT/calendar/Part5/ or in the printed version of the current USQ Handbook.

ASSESSMENT NOTES

1 The due date for an assignment is the date by which a student must despatch the assignment to the USQ. The onus is on the student to provide proof of the despatch date, if requested by the Examiner.

2 The Faculty will normally only accept assessments that have been written, typed or printed on paper-based media.

3 In the event that a due date for an assignment falls on a local public holiday in their area, such as a Show holiday, the due date for the assignment will be the next day. Students are to note on the assignment cover the date of the public holiday for the Examiner's convenience.

4 Students who have undertaken all of the required assessments in a course but who have failed to meet some of the specified objectives of a course within the normally prescribed time may be awarded the temporary grade: IM (Incomplete - Make up). An IM grade will only be awarded when, in the opinion of the examiner, a student will be able to achieve the remaining objectives of the course after a period of non-directed personal study.

5 Students who, for medical, family/personal, or employment-related reasons, are unable to complete an assignment or to sit for an examination at the scheduled time may apply to defer an assessment in a course. Such a request must be accompanied by appropriate supporting documentation. One of the following temporary grades may be awarded IDS (Incomplete - Deferred Examination; IDM (Incomplete Deferred Make-up); IDB (Incomplete - Both Deferred Examination and Deferred Make-up).

6 The Faculty of Engineering and Surveying does not offer supplementary examinations.