CVEN 2302  MATERIALS AND STRUCTURES

COURSE DETAILS

<table>
<thead>
<tr>
<th>Units of Credit</th>
<th>6</th>
</tr>
</thead>
<tbody>
<tr>
<td>Contact hours</td>
<td>5 hours per week</td>
</tr>
</tbody>
</table>
| Class             | Mondays 13.00 – 15.00 hrs  
|                   | Wednesdays 09.00 – 10.00 hrs |
| Tutorial          | Wednesdays 10.00 – 12.00 hrs |
| Course Convenor   | Dr. N. Gowripalan  
|                   | email: n.gowripalan@unsw.edu.au  
|                   | Room: 610  
|                   | Phone: 9385 5146 |
| Additional Lecturers | Dr Wei Gao  
|                   | email: w.gao@unsw.edu.au  
|                   | Room: 608  
|                   | Phone: 9385 4123 |

INFORMATION ABOUT THE COURSE

Materials and Structures is a new course introduced in 2007 in the Second Year, as a continuation of Engineering Materials and Chemistry (MATS 1101) in the First Year. In *Materials and Structures* (CVEN 2302), topics on Concrete and Composites will be introduced in the ‘materials strand’. Areas such as mechanical properties, durability and applications will be covered. In ‘structures area’, considerations such as loading types, fundamentals of design of tension and compression members will be dealt with. The relationship between this subject and the subjects in previous and forthcoming years is shown below:
HANDBOOK DESCRIPTION


OBJECTIVES

To introduce students to the structural materials such as concrete, composites and fundamentals of design of tension, compression members.

TEACHING STRATEGIES

<table>
<thead>
<tr>
<th>Private Study</th>
<th>Lectures</th>
<th>Tutorials</th>
<th>Assessments (quiz/exam)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Review lecture material</td>
<td>Listen carefully and ask questions</td>
<td>Work in groups</td>
<td>Demonstrate your understanding of material behaviour</td>
</tr>
<tr>
<td>Do tutorial problems</td>
<td>Try and understand the principles</td>
<td>Preparing for assignments</td>
<td>Demonstrate your understanding of design fundamentals</td>
</tr>
<tr>
<td>Reflect on class and tutorial problems</td>
<td>Follow worked examples</td>
<td>Ask questions</td>
<td>Demonstrate problem solving</td>
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EXPECTED LEARNING OUTCOMES

First
Engineering Materials and Chemistry (MATS 1101)
Engineering Mechanics (CVEN 1300)

Second
Materials and Structures (CVEN 2302)
Mechanics of Solids (CVEN 2301)

Third Year
Structural Analysis and Modelling (CVEN 3301)
Structural Behaviour and Design (CVEN 3302)
(Also CVEN 3322 and CVEN 3324)

Fourth
Advanced Materials Technology (CVEN 4305)
(Also other design related subjects)
To be able to understand the behaviour of structural materials.
To be able to assess material suitability for structures in civil engineering.
To be able to apply the fundamentals learnt in this course to real engineering problems in large scale concrete, composite or steel structures such as tall buildings and bridges.

For each hour of contact it is expected that a student will put in at least 1.5 hours of private study.

**ASSESSMENT**

There will be a formal examination in November. The final examination will have two parts: Section A – Materials and Section B - Structures. This examination will represent 70% of the mark and a class mark representing 30% of the mark will be assessed on the quiz/assignments submitted.

**COURSE PROGRAM**

The following topics will be covered.

**Materials Strand**

<table>
<thead>
<tr>
<th>Week</th>
<th>Topic</th>
<th>Assessments</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>L1 – Introduction, Cements</td>
<td></td>
</tr>
<tr>
<td>2</td>
<td>L2 – Aggregates and Admixtures</td>
<td></td>
</tr>
<tr>
<td>3</td>
<td>L3 - Fresh Concrete Properties</td>
<td></td>
</tr>
<tr>
<td>4</td>
<td>L4 - Hardened Concrete Properties and High Performance Concrete</td>
<td>Quiz 1</td>
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</tbody>
</table>

**Structures Strand**

<table>
<thead>
<tr>
<th>Week</th>
<th>Topic</th>
<th>Assessment</th>
</tr>
</thead>
<tbody>
<tr>
<td>5</td>
<td>Introduction, Limit state design</td>
<td></td>
</tr>
<tr>
<td>6</td>
<td>Permanent actions (dead loads), Imposed actions (live loads)</td>
<td></td>
</tr>
<tr>
<td>7</td>
<td>Wind actions, Introduction to steel structures</td>
<td></td>
</tr>
<tr>
<td>8</td>
<td>Design of tension members</td>
<td></td>
</tr>
<tr>
<td>9</td>
<td>Buckling of columns</td>
<td>Hand in 1 due</td>
</tr>
<tr>
<td>10</td>
<td>Design of compression members</td>
<td></td>
</tr>
<tr>
<td>11</td>
<td>Steel beams</td>
<td></td>
</tr>
<tr>
<td>12</td>
<td>Simple steel connections</td>
<td>Hand in 2 due</td>
</tr>
</tbody>
</table>

**RELEVANT RESOURCES**

**Text Books:**

**Materials**

**Structures**

**Recommended Reading:**

**COURSE EVALUATION AND DEVELOPMENT**

The School of Civil and Environmental Engineering evaluates each course each time it is run through (i) the UNSW Course and Teaching Evaluation and Improvement (CATEI) process, and (ii) Focus Group Meetings.

As part of the CATEI process, your student assessments on various aspects of the course are graded; the Course Coordinator prepares a summary report for the Head of School. Any problem areas are identified for remedial action, and ideas for making improvements to the course are noted for action the next time that the course is run.

Focus Group Meetings are conducted by the four Year Managers (academic staff) for any students who wish to attend, in each year of the civil and/or environmental engineering programs. Student comments on each course are collected and disseminated to the Lecturers concerned, noting any points which can help improve the course.

**DATES TO NOTE**

Refer to MyUNSW for important Details in 2011 available at:
https://my.unsw.edu.au/student/resources/KeyDates.html

**NOTES ON ASSESSMENT**

**PLAGIARISM**

Beware! An assignment that includes plagiarised material will receive a 0% Fail, and students who plagiarise may fail the course. Students who plagiarise are also liable to disciplinary action, including exclusion from enrolment.

Plagiarism is the use of another person’s work or ideas as if they were your own. When it is necessary or desirable to use other people’s material you should adequately acknowledge whose words or ideas they are and where you found them (giving the complete reference details, including page number(s)). The Learning Centre provides further information on what constitutes Plagiarism at:
http://www.lc.unsw.edu.au/onlib/plag.html

**COMMON SCHOOL INFORMATION**

For information about: Notes on assessments and plagiarism

- School policy
- Special Considerations
- Solution to Problems
- Year Managers and Grievance Officer of Teaching and Learning Committee, and
- CEVSOC

Refer to Common information on the School website available at:
http://www.civeng.unsw.edu.au/info-about/our-school/policies-procedures-