Description: Detailing of Structures

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<th>Subject</th>
<th>Cat-Nbr</th>
<th>Class</th>
<th>Term</th>
<th>Mode</th>
<th>Units</th>
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<td>2, 2002</td>
<td>EXT</td>
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Academic Group: FOENS
Academic Org: FOES03
HECS Band: 2
ASCED Code: 030903

STAFFING
Examiner: Arn Winter
Moderator: Harold Greer

PRE-REQUISITES
Prerequisite: ENG 1100 Corequisite: CIV1501

RATIONALE
Structural design involving calculations is one facet of the design process. The need to complement this with skilful and economic detailing is paramount to achieve a final design that will serve its function for the design life of the structure. The ability to convey details via drawings is a necessary part of achieving a final result in engineering design.

SYNOPSIS
This is a practically oriented course which introduces students to the detailing of concrete, steel and timber structures. The course aims to develop the student's understanding of element behaviour, and its significance to detailing; and to establish the student's ability to prepare working drawings for structural projects.

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

- explain and interpret structural drawings;
- prepare working drawings for reinforced concrete elements, from designer's calculations, to current industry standards;
- arrange such reinforced concrete elements to preclude steel clashes and facilitate steel fixing while satisfying design requirements;
- prepare reinforcement bending schedules for reinforced concrete elements using CIA preferred shape tables and schedule forms;
• illustrate and interpret steel structural framing plans (General Information plans);
• prepare fabrication drawings for structural steel frames, satisfying strength requirements as specified, and facilitating manufacture and erection;
• prepare holding down or cast in bolt plans compatible with the elements defined in the fabrication drawings for steel structures;
• apply timber framing principles to the sizing of timber members in a structure;
• prepare drawings which are clear and legible, and correctly convey the required information to the intended user;
• apply appropriate conventions from relevant standards and building codes.

TOPICS

<table>
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<th>Description</th>
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<tr>
<td>1. Reinforced concrete</td>
<td>40.00</td>
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<td>2. Structural steel</td>
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<td>3. Structural timber</td>
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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.

Although there is no textbook for this course other than the Study Book provided, the major SAA codes that underlie the three main modules are: for the reinforced concrete module - AS3600 (2001) Concrete Structures; for the steel module - AS4100 (1998) Steel Structures; and, for the timber module - AS1720.1 (1997) Timber Structures and AS1720.2 (1990) Timber Properties.

Many other codes of practice and recognised industry standards, though not actually quoted may be inferred in the text or need to be applied in the completion of the set assignments. Chief among these are:

AS1101.3 (1987) - Graphical Symbols For General Engineering - Welding
AS1111.1 (2000) - ISO Metric Hexagonal Bolts And Screws
AS1163 (1991) - Structural Steel Hollow Sections
AS1302 (1990) - Steel Reinforcing Bars For Concrete
AS/NZS1554.1 (2000) - Structural Steel Welding - Welding Of Steel Structures
AS1684 (1999) - Residential Timber-Frame Construction
AS2870 (1996) - Residential Slabs For Footings
AISC (1985) - Standardised Structural Connections
BHP (1998) - Hot Rolled and Structural Steel Products
AS/NZS1554.3 (1983) - Structural Steel Welding - Welding Of Reinforcing Steel

STUDENT WORKLOAD REQUIREMENTS

<table>
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<tr>
<th>ACTIVITY</th>
<th>HOURS</th>
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<tr>
<td>Private Study</td>
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<td>Project Work</td>
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ASSESSMENT DETAILS

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<tr>
<th>Description</th>
<th>Marks Out of</th>
<th>Wtg(%)</th>
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<tr>
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<td>400.00</td>
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<td>PROJECT 2 STRUCTURAL STEEL</td>
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<td>20.00</td>
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<td>01 Nov 2002</td>
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OTHER REQUIREMENTS

1. A student must submit all three assessment projects to a satisfactory standard before a pass will be given for the course. The grade of pass will depend on the aggregate score of the three projects.
2. Any student who obtains less than 40% of the allocated marks in any assessment may be required to repeat that assessment.
3. A minimum standard of communication skills must be demonstrated in order for a passing grade to be achieved.
4. The due date for an assignment is the date by which a student must submit the assignment to the USQ. The onus is on the student to provide proof of the submit date, if requested by the Examiner.
5. Students must retain a copy of each item submitted for assessment. This must be produced within five days if required by the Examiner.
6. In accordance with University's Assignment Extension Policy (Regulation 5.6.1), the examiner of a course may grant an extension of the due date of an assignment in extenuating circumstances.
7 If students submit assignments after the due date without prior approval then a penalty of up to 10% of the total marks for the assignment may apply for each working day late.

8 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.

9 The Faculty of Engineering and Surveying will NOT accept submission of handwritten or typed assignments by facsimile, e-mail or computer diskette. Students in remote locations who do not have regular access to postal services may be given special consideration.

10 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.

11 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; IDSM (Incomplete Deferred Examination and Make-up).