The University of Southern Queensland

Course specification

The current and official versions of the course specifications are available on the web at <http://www.usq.edu.au/coursespecification/current>.
Please consult the web for updates that may occur during the year.

Description: Code-Based Structural Design

Subject	Cat-nbr	Class	Term	Mode	Units	Campus
ENG	8801	87095	1, 2009	WEB	1.00	Toowoomba

Academic group: FOENS
Academic org: FOENSV
Student contribution band: 2
ASCED code: 030903

RATIONALE

This course provides informed and responsible instruction in the use of Space Gass, a software package that aids the application of code-based design primarily in steel but also in reinforced concrete.

SYNOPSIS

All engineering projects involve design and planning stages which today are undertaken in large part with the aid of computer software packages such as Space Gass. Space Gass models of steel and reinforced concrete structures can be developed and assessed in accordance with the Australian Institute of Steel Construction recommendations. The design of structures involves making compromises between various integral components in order to satisfy loading capacities, safety and cost targets. Professional engineers are therefore required to develop their appreciation of these constraints, and proficiency in modelling using Space Gass for designing both steel and reinforced structures.

OBJECTIVES

The course objectives define the student learning outcomes for a course. The assessment item(s) that may be used to assess student achievement of an objective are shown in parenthesis. On completion of the course, students should be able to:

1. display proficiency in developing Space Gass models for the analysis of steel and reinforced concrete structures (assignments);
2. clearly document Space Gass models and results (assignments);
3. demonstrate a disciplined approach to structural modelling including self checking (assignments);
4. competently select and use a variety of approximate methods of analysis that may be used to check the validity of computer models (assignments);
5. demonstrate possession of a detailed appreciation and understanding of the compromises that are made in modelling of steel and reinforced concrete structures (assignments);
6. demonstrate a broad understanding of load estimation over the full range of building, civil, industrial and maritime type structures (assignments).

TOPICS

	Description	Weighting (%)
1.	Basic inputs to Space Gass Model	10.00
2.	Restraints, local axes and member releases	10.00
3.	Approximate analysis	15.00
4.	Modelling Steel Structures	10.00
5.	Modelling loads	15.00
6.	Modelling Reinforced Concrete Structures	15.00
7.	The Space Gass Steel Design Facility	15.00
8.	Steel Connection Design	10.00

TEXT and MATERIALS required to be PURCHASED or ACCESSED

ALL textbooks and materials are available for purchase from USQ BOOKSHOP (unless otherwise stated). Orders may be placed via secure internet, free fax 1800642453, phone 07 46312742 (within Australia), or mail. Overseas students should fax +61 7 46311743, or phone +61 7 46312742. For costs, further details, and internet ordering, use the 'Textbook Search' facility at http://bookshop.usq.edu.au click 'Semester', then enter your 'Course Code' (no spaces).

Australian Standard AS1170, Structural design actions, parts 0, 1 and 2, Standards Australia,

Australian Standard AS4100, Steel structures, Standards Australia,

Australian Standard AS5100, Bridge design, part 2 - design loads, Standards Australia,

Design capacity tables for structural steel, 3rd edn, Australian Institute of Steel Construction,

Australian Standard AS4997, Guidelines for the design of maritime structures, Standards Australia,

Australian Standard AS3600, Concrete structures, Standards Australia,

Space Gass (Version 8 or later) by Integrated Technical Software including the modules for Linear Analysis, Non linear Analysis, Buckling Analysis and the steel design facility Limsteel. Enrolled students have the opportunity to download a free version of Space Gass that is adequate for the purposes of this course. Note that the use of Space Gass in this course is in no way intended to imply that it is in any way superior to other commercially available packages.

Durack, JM 2005, *Modelling and analysis for code based design - graduate training materials*, Connell Wagner,

Hogan, TJ & Thomas, IR 1994, *Design of structural connections*, 4th edn, Australian Institute of Steel Construction, North Sydney.

(Limit States edn.)

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.

Trahair, NS & Bradford MA 1998, *The behaviour and design of steel structures to AS4100*, 3rd edn, E & FN Spoon, London.

(Australian edn.)

Warner, RF, Rangan, BV, Hall, AS & Faulkes KA 1998, *Concrete structures*, Longman, South Melbourne.

STUDENT WORKLOAD REQUIREMENTS

ACTIVITY	HOURS
Assessments	55.00
Directed Study	55.00
Private Study	55.00

ASSESSMENT DETAILS

Description	Marks out of	Wtg (%)	Due date
ASSIGNMENT 1	150.00	15.00	24 Mar 2009
ASSIGNMENT 2	250.00	25.00	21 Apr 2009
ASSIGNMENT 3	250.00	25.00	26 May 2009
ASSIGNMENT 4	250.00	25.00	23 Jun 2009
ASSIGNMENT 5	100.00	10.00	23 Jun 2009

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 satisfactorily complete an assessment item a student must achieve at least 50% of the marks or a grade of at least C-. Refer to Statement 4 below for the requirements to receive a passing grade in this course.

3 Penalties for late submission of required work:
If students submit assignments after the due date without extenuating circumstances then a penalty of 5% of the assigned mark may apply for each working day late up to a maximum of ten working days at which time a mark of zero can be recorded for that assignment.

4 Requirements for student to be awarded a passing grade in the course:
To be assured of receiving a passing grade in a course a student must obtain at least 50% of the total weighted marks for the course.

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:
There is no examination in this course.

7 Examination period when Deferred/Supplementary examinations will be held:
Not appplicable.

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/corporateservices/calendar/part5.htm or in the current USQ Handbook.

ASSESSMENT NOTES

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

2 Students must retain a copy of each item submitted for assessment. This must be dispatched to USQ within 24 hours if required by the Examiner.

3 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.

4 In this course students may submit assignments electronically in the format specified in the assignment requirements.

5 The Faculty will NOT accept submission of assignments by facsimile.

6 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.

7 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.

8 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. The following temporary grade may be awarded: IDM (Incomplete Deferred Make-up).

OTHER REQUIREMENTS

1 Students must have access to e-mail and internet access to USQConnect for this course.
