



CVEN4002 - STRAND B: Design Practice

Semester 1, 2016

Never Stand Still

Faculty of Engineering

School of Civil and Environmental Engineering

COURSE DETAILS

Units of Credit	6		
Contact hours	4 hours per week		
Class	Thursdays,	9:00 – 11:00	Ritchie Theatre
Workshop	Thursdays,	12:00 – 2:00	Design Studio CE501/Computer Lab. CE201
	Thursdays,	2:00 – 4:00	
Course Coordinator and Lecturer	Arnaud Castel email: a.castel@unsw.edu.au office: CVEN 708 phone 93855043		
Consultant Engineer	Douglas Jenkins email: dougjenkins@interactiveds.com.au office: Interactive Design Services Pty Ltd		

INFORMATION ABOUT THE COURSE

This final year integrating course involves formulating designs for and solution to real world civil engineering problems in the areas of structures and geotechnical engineering. The problems will be drawn from industry and will be multi-disciplinary involving application of material learnt throughout the undergraduate program. The course will involve group project work and will involve the preparation of working drawings, bill of quantities and project reports similar to those required in industry.

The course involves the design of a girder bridge according to Australian Standards and RMS specifications.

OBJECTIVES

To provide students with the opportunity to undertake practical civil engineering projects and to develop final detailed designs including the preparation of working drawings and project reports similar to those required in industry.

To build on the skills developed in any previous Civil Engineering Practice classes including

- An in-depth engagement with the relevant disciplinary knowledge in its inter-disciplinary context
- Capacity for analytical and critical thinking and for creative problem solving
- Ability to engage independent and reflective learning
- Information literacy
- Skills for collaborative and multi-disciplinary work
- Skills for effective communication

TEACHING STRATEGIES	
Private Study	• Review lecture material, Standards and textbook • Do set problems and assignments • Join Moodle discussions of problems • Reflect on class problems and assignments • Download materials from Moodle • Keep up with notices and find out marks via Moodle
Lectures	• Find out what you must learn • See methods that are not in the textbook • Follow case study • Hear announcements on course changes
Workshops	• Be guided by demonstrators • Practice solving set problems • Ask questions
Assessments (multiple choice questions, quizzes, tests, examinations, assignments, site visit reports, hand-in exercises, laboratory reports etc.)	• Demonstrate your knowledge and skills • Demonstrate higher understanding and problem solving • Demonstrate understanding of concept design and provide complete design solutions

EXPECTED LEARNING OUTCOMES

- To be able to grasp conceptual design ideas.
- To be able to assess suitability of structures to meet requirements in civil engineering.
- To be able to apply the fundamentals learnt in this course to real engineering problems in large scale concrete structures.

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

ASSESSMENT

There will be NO formal examination. The final marks for the course will be determined from group assessments.

Approximate weightings are as follows:

Phase 1 design Report 40%
Phase 2 design Report 60%

ONE Report is required per Group.

Late submissions will not be accepted.

All submissions must be accompanied by a front sheet signed by all group members indicating individual % contributions.

COURSE PROGRAM

The course involves one major project.

A 4-hour period is allocated per week to the course. The first two hour is common to all students for lectures and to clarify any common issues. During the following 2 hours, students will work in groups under the guidance of the demonstrators.

Students will work in groups of 6.

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Lecture	Date	Topic	Assessments Due
1	1-March	Introduction, course outline, form groups, Project details, Design standard... Form groups	
2	8-March	Substructure Design week 1: assess substructure loads and foundation design parameters, typical pier details. Initiation to Strand7 Structure design Software.	
3	15-March	Substructure Design week 2: pier and footing design and typical abutment and wing wall arrangement.	
4	22-March	Substructure Design week 3: pier and footing design	
Break			
5	12-April	Substructure Design week 4: finalize pier and footing design	
6	19-April	Highway design loads; introduction to bridge deck design, manual and spreadsheet based analysis and design methods <i>Phase 1 Report Due</i>	x
7	26-April	Set up basic bridge deck model in Strand7	
8	3-May	Refine bridge deck model; moving load analysis, fatigue analysis, extract and organize results, finalize top-slab design	
9	10-May	Seismic design principles, Australian practice, pseudo-static and dynamic analysis using Strand7.	
10	17-May	Prestress design to AS 5100; assessment of deflections	
11	24-May	Sustainability and durability; principles, sources of information, data and format for design report	
12	2-June	Phase 2 Report Due	x

RELEVANT RESOURCES

RMS Specifications (Roads and Maritime Services, formerly RTA)

<http://www.rta.nsw.gov.au/doingbusinesswithus/specifications/bridgeworks.html>

Australian Standards relevant to Bridge Design and Construction

AS 5100 – 2004 Bridge Design:

- AS 5100.1 Scope and general Principles
- AS 5100.2 Design Loads
- AS 5100.3 Foundations and Soil-Supporting Structures

- AS 5100.4 Bearings and Deck Joints
- AS 5100.5 Concrete

AS3600-2009 Reinforced Concrete design

S.J. Foster, A.E. Kilpatrick, R.F. Warner, Reinforced Concrete Basics 2E: Analysis and design of reinforced concrete structures. Editor: Pearson Australia, 2010.

DATES TO NOTE

Refer to MyUNSW for Important Dates available at:

<https://my.unsw.edu.au/student/resources/KeyDates.html>

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:

<https://student.unsw.edu.au/plagiarism>

ACADEMIC ADVICE

(Formerly known as Common School Information)

For information about:

- Notes on assessments and plagiarism,
- School policy on Supplementary exams,
- Special Considerations,
- Solutions to Problems,
- Year Managers and Grievance Officer of Teaching and Learning Committee, and
- CEVSOC.

Refer to Academic Advice on the School website available at:

<http://www.engineering.unsw.edu.au/civil-engineering/resources/academic-advice>