

**CIVL2201 Structural Mechanics: Semester 1, 2009****Unit of Study Information Sheet - 2009****General Information**

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Tutors:	Mr Benoit Gilbert, Mr Iain Brown, Mr Cao Hung Pham, Mr Thanh Binh Nguyen, Mr John Papangelis, Mr Peter Xie
Lectures:	Tuesdays 10 am – 11 am (PNR Lecture Theatre) Wednesdays 10 am – 11 am (PNR Lecture Theatre) Thursdays 10 am – 11 am (PNR Lecture Theatre)
Tutorial:	Thursdays 2 pm – 4 pm (Locations TBA)
Additional Voluntary Tutorial:	Tuesdays 1.15 pm – 2.00 pm (Civil Engineering Drawing Office)
Laboratory Sessions:	Students are expected to perform a small experiment at a time convenient to them (approx 2 –3 hrs).
Web site:	http://www.civil.usyd.edu.au/courses/civl2201

What is “Structural Mechanics”?

“Structural Mechanics” studies how a *deformable* body responds to loads. Sometimes referred to as the “Mechanics of Solids” or “Strength of Materials”, Structural Mechanics involves the *internal actions* (forces and moments) within a member under loading, the deformations of the body, and the stresses and strains associated with those internal actions and deformations.

Structural Mechanics is an intermediate step in understanding the behaviour of structures. Following from the basics of statics, which examines equilibrium, Structural Mechanics studies what occurs inside the components of the static structural system or body. In subsequent units of study, the principles of Structural Mechanics are combined with more advanced structural analysis; the knowledge of properties of materials such as steel, concrete, and timber; and consideration of additional modes of failure such as buckling, to produce an understanding of the strength and serviceability of most structural systems, and the design of a complete structure.

While the term “structural” has been constantly used above, a thorough understanding of structural mechanics is important in many other engineering fields, such as aeronautical, mechanical, geotechnical, and fluids. Many engineering problems can be solved by consideration of the basics of a free body diagram, the equations of equilibrium, and stress and strain.

Anyone can remember formulae and apply them without considerable understanding of the problem. A good engineer is able to solve a previously unsolved problem, and the basic tools of structural mechanics can be invaluable in finding the solution and understanding the behaviour of a system.

Objective

The primary objective is to understand internal actions (forces and moments) in structures (deformable objects) under loads in three key areas:

- *how structures resist external loads by internal actions,*
- *the distribution of internal actions within structures, and*
- *the deformations, stresses and strains associated with the internal actions.*

Outcomes

At the end of this unit of study, students should be able to:

- Understand the basic methods of load transfer in structures – tension, compression, bending, shear and torsion,
- Apply the equations of equilibrium to determine the distribution of internal actions in a simple structure by drawing BMDs, SFDs, AFDs, and TMDs,
- Understand the significance and be able to calculate the geometric properties of structural sections (I , Z , S , J etc),
- Understand the effect of internal forces, and deformations of bodies through the concept and calculation of strains and stresses,
- Appreciate the behaviour of structures by analysing structures without numerical calculations,
- Display a knowledge of basic material properties, combined stresses and failure criteria, and
- Demonstrate their hands-on experience of the behaviour of structural members via experiments and the ability to prepare written reports on those experiments.

Emphasis in the assessment scheme will be placed on understanding structural behaviour and solving problems, rather than remembering formulae or performing complex calculations. The need to be able to solve complex problems by hand methods is decreasing as the use of computers increases and available technology advances. Hence, there will be particular emphasis on thorough knowledge of the basics and fundamentals, rather than the ability to solve problems which require excessive calculations.

Graduate Attributes

Graduate attributes are the general generic qualities which characterise graduates of The University of Sydney and engineering graduates specifically. Generic attributes go beyond the disciplinary expertise or technical knowledge that has traditionally formed the core of most university courses and describe the qualities that also equip graduates for their role in society and the world of work.

This unit of study seeks to develop some of these attributes in a variety of ways, some of which are given below.

- Students will experience **research and inquiry** by observing how the theories in structural mechanics are derived from fundamental equilibrium, physics and mathematics, by validating some of these theories through experimentation and practice problems, and appreciating how the theories of structural mechanics relate to design in structures, soils, fluids and other engineering fields.
- **Information literacy** is an important part of this unit of study as students will receive data in a variety of forms: printed, WWW, email, experimental, and will use a variety of tools and resources to solve problems.
- The course encourages **personal and intellectual autonomy** by ensuring students are independently able to solve problems while still stressing the importance of peer consultation and teamwork in learning.
- **Ethical, social and professional understanding** is considered by including relevant, topical and modern examples in the syllabus, while also covering some important historical developments.
- **Communication** skills are developed by having a series of assignments that work towards an important final report, and by using student peer review, concentrating on how well the student has communicated the solution process, as an integral part of the assessment process.

Assumed Knowledge

There are no prerequisites for this unit of study but it is assumed that students are competent in the content covered in the first year unit of study ENGG1802 Engineering Mechanics. Students who have failed ENGG1802 should note that no special consideration (on the basis of timetable clashes or lack of knowledge of basics) would be given to them if they do choose to enrol. *The pass rate for students who had not passed ENGG1802 but still attempted Structural Mechanics is notably lower than for students who have passed ENGG1802. I strongly recommend that any student who has not passed ENGG1802 yet wants to attempt Structural Mechanics, and any repeating students, should consult with me as soon as possible.*

From ENGG1802, students should be competent in the following areas:

- The concept of force and moment equilibrium in two and three dimensions,
- Drawing free body diagrams,
- Establishing and solving the equations of equilibrium from the FBD,
- Setting out solutions logically, clearly and neatly.

Students should be competent in certain mathematical skills:

- Solving algebraic equations,
- Differentiation and integration (including double integrals),
- Drawing graphs of polynomials (especially) and other mathematical functions,
- Trigonometry.

Other skills, such as knowledge of spreadsheets, may also be useful in this unit of study, particularly for advanced questions.

Timetable *This timetable is liable to change.*

Week	Date		Lecture	Tutorial
1	Tue	3/3	Introduction to the course	Quiz 1, Introduction
	Wed	4/3	Introduction	
	Thur	5/3	Equilibrium	
2	Tue	10/3	Internal Actions	Internal Actions
	Wed	11/3	Internal Actions	
	Thur	12/3	Internal Actions	
3	Tue	17/3	Internal Actions	Internal Actions/ Laboratory Session
	Wed	18/3	Stress and Strain	
	Thur	19/3	Stress and Strain	
4	Tue	24/3	Axial Force	Quiz 2, Internal Actions/Axial Force
	Wed	25/3	Axial Force	
	Thur	26/3	Elastic Bending	
5	Tue	31/3	Elastic Bending (A1 Due)	Axial Force/Bending
	Wed	1/4	Elastic Bending	
	Thur	2/4	Elastic Bending	
6	Tue	7/4	Elastic Bending (L1 Due)	Bending
	Wed	8/4	Elastic Bending	
	Thur	9/4	Elastic Bending	
Easter / Mid-semester break (Friday 10 April – Sunday 19 April)				
7	Tue	21/4	Shear	Quiz 3, Bending
	Wed	22/4	Shear	
	Thur	23/4	Torsion	
8	Tue	28/4	Torsion	Bending and Shear
	Wed	29/4	Mid-semester Review	
	Thur	30/4	Mid-semester Review	
9	Tue	5/5	Deflections	Quiz 4, Torsion/Deflections
	Wed	6/5	Deflections	
	Thur	7/5	Deflections	
10	Tue	12/5	Deflections	Deflections
	Wed	13/5	Deflections	
	Thur	14/5	Pipes and Pressure Vessels	
11	Tue	19/5	Trusses (A2 Due)	Deflections, Pressure Vessels, & Trusses (L2)
	Wed	20/5	Material Properties	
	Thur	21/5	Combined Stresses	
12	Tue	26/5	Combined Stresses (L2 Due)	Quiz 5, Material Properties & Combined Stresses
	Wed	27/5	Yield Criteria	
	Thur	28/5	Buckling	
13	Tue	2/6	Advanced Bending	Yield Criteria, Buckling & Advanced Topics
	Wed	3/6	Advanced Bending	
	Thur	4/6	Review	
Stuvac – Monday 8 June to Friday 12 June				
Exams - Monday 5 June to Saturday 27 June				
Mid-year Holidays – Sunday 28 June – Sunday 26 July				
Semester 2 commences – Monday 27 July				

Lecture Notes Contents

Chapter 1 Introduction

Forces, concentrated and distributed loads, supports and reactions, methods of transferring forces, units.

Chapter 2 Basics of Structures

Loads, restraints, two and three dimensional systems and equilibrium, force and moment equilibrium, free body diagrams.

Chapter 3 Internal Actions: BMDs, SFDs, AFDs, and TMDs

Tension, compression, bending, shear, torsion, equilibrium of external forces and internal actions, bending moment diagrams, shear force diagrams, axial force diagrams, twisting moment diagrams.

Chapter 4 Elasticity, Stress and Strain, and Basic Material Properties

Deformation, elastic, plastic and inelastic behaviour, definition of stress and strain, shear stress and strain, Poisson's ratio, Hooke's Law – elasticity, Young's (elastic) modulus, yield stress, behaviour of common structural materials, elastic – plastic approximation, basic materials science.

Chapter 5 Axial Forces: Tension and Compression

Normal strains and stress, compatibility, thermal effects.

Chapter 6 Bending of Beams

Engineering bending theory, linear strain and stress distributions, geometric section properties – centroid, principal axes, first and second moments of area, elastic section moduli, bending about an axis, parallel axis theorem, basic differential equations of bending, composite beams. Advanced topics: Yielding of beams, plastic section modulus, plastic moment, bending about non-principal axes.

Chapter 7 Shear Force and Shear Stresses in Beams

Calculating shear stresses in beams, shear flow.

Chapter 8 Torsion

Uniform torsion, shear stresses in circular sections, the torsion constant, concept of the shear centre, introduction to warping torsion.

Chapter 9 Deflection of Beams

Methods of calculating deflections, integration method, Macauley brackets, moment-area theorem, standard cases, some statically indeterminate systems.

Chapter 10 Pipes and Pressure Vessels

Hoop stress.

Chapter 11 Trusses

Analysis of statically determinate trusses, method of joints, method of sections, introduction to statically indeterminate trusses.

Chapter 12 Material Properties, Combined Stresses and Yield Criteria

Material properties of common structural materials, elements under combined normal and shear stresses, Mohr's circle of stresses, principal stresses, Tresca's and von Mises' yield criteria

Chapter 13 Introduction to Buckling and Instability

Euler (flexural) buckling, introduction to real behaviour, other buckling modes.

Chapter 14 Influence Lines

Purpose and use of influence lines.

Lectures

An intentionally incomplete text book has been produced and is available from the Co-op Bookshop for approximately \$65. The notes contain some theory and examples, and some empty spaces for material covered during lectures. Much of the theory is given in the text book, so that students have time to understand the explanations given in lectures, rather than lose concentration when quickly copying notes from an overhead projector. Some of the blank spaces in the text book will be covered in lectures, while time may be allocated for students to attempt some problems themselves during lectures. This is to maintain interactivity in lectures.

Students should recognise that even though notes are provided, they should still attend lectures. Important observations, additions and annotations will be made to the notes during lectures. The syllabus and exam content reflect what is covered in the lectures, rather than what is given in the notes.

Regular attendance and participation in lectures are considered important for successful understanding and performance in this unit of study.

Lectures will be recorded with the audio/computer image available for viewing after the lectures through the University's Lectopia system accessed via WebCT. The streamed lectures do not capture the entire experience of a live lecture, not the content written on the white board or demonstrated live. Streamed lectures are a supplement to the live lectures for revision purposes or for the occasional missed lecture.

Tutorial Sessions

A 2 hour tutorial session is timetabled for Thursday afternoons. A variety of activities will take place during the tutorial sessions, such as discussion of problems, formative assessment tasks, and a laboratory session. The majority of the time in tutorials will be allocated for students to work on the problem questions. **Students should attend their allocated tutorial group and room.**

There will be a compulsory laboratory session during the tutorial on Thursday 22 March. Assessable quizzes have been scheduled during some tutorial sessions.

Regular attendance and participation in tutorials, and attempting problems before the allocated session, are considered important for successful understanding and performance in this unit of study.

During 7 of the 13 tutorial sessions (the sessions that do not include a quiz or the lab session), there will be a short submission relating to work attempted during that tutorial. For students who make 5 suitable submissions, then their lowest out of the 5 quiz scores will be ignored, and the average of the other 4 scaled appropriately.

Tutorial Problems and "In Class" Problems

At the end of every chapter there is a set of tutorial problems. The questions are graded (1 – fundamentals, 2 - applied, and 3 – advanced). Students should be able to complete type 1 (fundamental) questions reasonably easily, while type 2 (applied) questions will require some thought, visualisation, and more detailed calculations. Type 3 (advanced) questions are potentially more difficult and time consuming, and are specifically designed to challenge the advanced students in the unit of study, though they are not necessarily mathematically difficult. Students should read and attempt the questions before the tutorial session. It is expected that students will have completed at least two of the basic questions, and read all the questions before the tutorial time. The tutorial questions are designed to complement the lecture material, and many important observations can be made from performing the tutorial questions. For this reason, students should aim to complete most of the questions as they progress through the semester, rather than waiting till Stuvac.

During some lectures and tutorials a set of "in class" problems may be distributed. These will be of similar nature to the fundamental tutorial questions. These questions are specifically designed to be performed during the lecture or tutorial period, and will relate directly to material just covered in class. While no marks are assigned to the completion of these problems, students are to submit their answers at the end of the session. The lecturer will examine all responses to give some brief group feedback, and will take note of the students of who submitted this exercise.

It is also suggested that students look at some of the many different text books available on "Structural Mechanics" or "Mechanics of Solids". Most of these books will provide a wide range of additional examples and questions which can be useful learning tools for this unit of study.

Assignment, quiz and exam questions will be of similar nature to those in the tutorials. A separate handout on the expectations of solutions will be distributed.

Books and Resources

Text Book

Structural Mechanics, 2nd edition by Tim Wilkinson (2009), published by Pearson Education available from the Co-op Bookshop.

Reference Books

Engineering Mechanics – Volume 1: Statics, Fourth edition, by JL Meriam and LG Kraig.

Library Classifications

Some relevant books may be found in the library in the following areas:

Elasticity (531.38), Engineering Mechanics (620.1), Strength of Materials (620.11), Structural Analysis (624.17). Any book on the topic of “Mechanics of Solids” may be useful.

Internet Resources

The web page for this unit of study, <http://www.civil.usyd.edu.au/courses/civl2201>, and WebCT, will also contain links to other relevant sites that may assist students in Structural Mechanics.

Unit of study Criteria and Assessment

Assessment Components

The unit of study has several assessment tasks:

Exam	50 %	At end of semester.
Assignments	10 %	2 during semester.
Quizzes	25 %	5 during semester.
Laboratory reports	15 %	1 individual and 1 group submission.

Criteria for Passing

In order to achieve a pass in this unit of study, all the following criteria must be satisfied:

- A total mark of at least 50 %.
- Satisfactory end of semester examination performance of 45%.
- Satisfactorily complete the laboratory exercises and write acceptable reports.

Students who do not meet all the criteria will not receive a pass in the unit of study, and regardless of their performance in individual components of the unit of study, will not receive a mark greater than 45 %. *Students should note that satisfying the non-exam criteria listed above does not necessarily imply that they have achieved “satisfactory progress” as mentioned below.*

Grade Descriptors and Assessment Standards

Separate handouts will be distributed outlining the standards expected to receive specific grades in assignments. These will also provide guides to students to help them improve the quality of their work.

Examination

There is a 3 hour examination at the end of the semester. The questions will be of a similar format to the type 1 (basic), type 2 (intermediate), and type 3 (advanced) questions given in the problem sets. The exam questions will require both calculations and explanation-type answers, to test understanding of the subject. The content and lecturer changed in 2001, so past papers prior to 2001 may not give a true indication of the nature of the exam, but students should be capable of answering most questions prior to 2001.

In order to receive a pass in this unit of study, students must satisfy certain criteria in order to demonstrate competency in the basics of the unit of study content. Satisfactory exam performance is one of those criteria. **Satisfactory exam performance is defined as an exam mark of 45 %.**

The concepts and content in this unit of study are essential to many aspects of engineering, so it is important that students can independently display competency. The aim of the exam is to assess that competency. The final examination is partial open book. Students are permitted to bring in annotated versions of the lecture notes book and a programmable calculator. No additional written material is permitted in the examination room. More details on the format of the examination will be given in lectures, and the nature of the examination described above is subject to change.

Quizzes

There will be 5 short (approximately 1 hour) quizzes held during the semester. The main aim of the quizzes is to examine the students' understanding of the main concepts in the unit of study covered to that date, without excessive calculations. The quizzes will provide feedback to the students on their individual performance, and help the lecturer identify students at risk. **These quizzes will be generally held in the 2nd hour of the tutorial session (ie 3.00 - 4.00 pm) on selected Thursdays during the semester. Please be aware of this now, and arrange any other university/work/social/sporting commitments to avoid clashing with these quizzes.**

Assignments

Students are expected to submit some problems at regular intervals in the form of assignments. The problems will not be marked in detail – they will be checked for the correct procedure and adequate presentation/setting out. A solution will be available, and it is each student's responsibility to check his/her submission with the solution. The lecturer will attempt to return the submissions within a week to ensure timely feedback to the students. There will be two assignments during the semester. More details on the assignments will be provided on a separate information sheet.

Laboratory Sessions/Reports

Students are required to attend two laboratory sessions during the semester. This gives students the opportunity to experience some structural behaviour at close hand. The results of the experiments will be compared with the theory developed in lectures and tutorials. One session will be a small introduction to material properties (held during a tutorial session) and the second is designed to be "self-serve" and performed without supervision. **There will be a compulsory laboratory session during the tutorial on Thursday 22 March.** The 2nd laboratory session is to be performed at a time of the students' convenience and should take no more than 2 hours to perform. Written reports will be required on both sessions.

More details on the laboratory sessions will be provided on a separate information sheet.

Formative Assessment Tasks

There will be some "formative assessment" task undertaken during some tutorial sessions. These tasks are not worth marks, but are primarily designed to give both the students and lecturer feedback on level of performance.

Tutorial Submission – Quiz Mark Scheme

During 7 of the 13 tutorial sessions (the sessions that do not include a quiz or the lab session), there will be a short submission relating to work attempted during that tutorial. For students who make 5 suitable submissions, then their lowest out of the 5 quiz scores will be ignored, and the average of the other 4 scaled appropriately.

Bonus Marks

Some of the quizzes and the final exam contain bonus mark questions – hence it is possible to get more than 100% in those components of the course. During semester, there may be some additional bonus mark questions announced in lectures or via email/WebCT.

Difficulties and Special Consideration

Students with any difficulties or circumstances that are likely to affect their performance in this unit of study are strongly advised to discuss them with the unit of study coordinator as soon as possible, so that appropriate allowances, if any, can be made to assist them and facilitate their performance. Students are strongly advised to familiarise themselves with the University's and the School's policies with respect to special consideration for performance in their units of study due to illness, misadventure, or any other circumstances. Requests for special consideration should always be made on the official "special consideration" form, and then lodged at the Student Centre, and a copy given to the School Secretary in Room 418 in the Civil Engineering Building. All requests are treated confidentially.

Students who request special consideration for the end of semester examinations may be eligible for "extra work". It is Faculty policy that "the Faculty intends only to compensate for sub-standard performance in assessments which do not reflect a student's true competence in a subject, and such provisions must not act to the disadvantage of other students". In order to qualify for "extra work" students must have shown satisfactory performance during the semester. Students should be aware that the following are considered when determining whether a student's performance is satisfactory: performance in tutorials and quizzes, attendance at lectures and tutorials, on-time submission of assignments, and other relevant matters.

How to Succeed in Structural Mechanics

The key outcome in Structural Mechanics is being able to **understand** the concepts. Being able to perform calculations is an important task, but it is not the only task. Being able to do calculations will help provide insight into the key issues and parameters, but understanding will also result from being able to **visualise** the problem and see the connection between the physical observations, theory, calculation methods, and practical situations.

In general, you will be expected to answer three types of questions:

- **Simple calculations:** You will be asked questions of similar nature to those covered in lectures or tutorials. This is to ensure that you know the process for standard calculations.
- **Understanding & explanation:** You will be asked to explain (without calculations) the implications or issues behind a problem. This will demonstrate that you understand the physical meaning of a problem.
- **Applied questions:** You will need to make use of the equations and processes you have learned, but the question will need to be considered from a different view. You will not be able to copy a previous answer, you will need to think first before answering. *This will demonstrate that you are an engineer!*

Weekly email update

- Each week, enrolled students will receive an email update summarising the content of the week, and information on upcoming content and assignments. It will contain suggestions on tutorial questions, assignments and quizzes. Use this as an important part of your study program. Message archives are on WebCT.

Lectures

- **Attend every lecture.**
- **Be actively involved.** Read the lecture notes before the lecture. Revise the notes after the lecture and attempt relevant questions as soon as possible afterwards. Take notes – not just what is written on the board, but also what the lecturer emphasises verbally.

Tutorials & Problems

- **Attempt problem questions** as soon as possible after the relevant lecture. The first few easy questions will follow a very similar procedure from examples in the lecture notes. Use these examples to reinforce the procedure.
- **Attend every tutorial.** Have several questions already attempted – if you have problems you will be able to ask your tutor.
- **Do not look** at solutions before you have attempted questions. This is counter productive and does not enhance your problem solving ability. In a real job and in the exam you will not have the solutions available.

Workload

- **Assign an average 9 - 10 hours each week.** There are 5 hours of lectures/tutorials each week, and you should also be prepared to do 4-5 hours a week on sample problems.

Quizzes

- The quiz questions are predominately similar to the simpler tutorial questions. The past few years worth of quizzes are online. Answers are not provided.
- Students who maintain a regular up to date, workload of tutorial questions during the semester should be adequately prepared for the quizzes.

Exam

- The exam has a mix of simple questions, explanation questions and applied questions.
- While the exam is open book, you should be suitably confident and competent to answer the simple questions without reference to the notes (ie you should just know “how” to draw a BMD).
- Applied questions – think before you write?
- Prepare for the exam by doing past exams under exam conditions – ie lock yourself away in your room for 3 hours with no solutions, no coffee, and no SMS, MSN or Facebook!

Assignments

- **Do them as early as you can.** Do not leave them to the last minute.

Student feedback

The lecturer will provide feedback verbally during lectures, by handouts, solutions and comments posted on the website, and regular weekly email summaries sent to all students. Students are highly encouraged to give positive and/or negative feedback related to this unit of study or the school to the lecturer or tutors at any time. Without feedback, potential problems or difficulties cannot be identified and rectified. Students are welcome to give feedback personally to the lecturer at anytime via any means they see fit, or they can give anonymous feedback at <http://www.civil.usyd.edu.au/current/undergraduate/feedback.shtml>.

There have been several changes to the structure of this unit over the past few years. This is based both on the student feedback at the end of each year, plus the lecturer's own assessment of the areas in which students appear to have difficulty.

Syllabus: While the syllabus has been generally unchanged, most years there are some modifications to examples, assignments, issues concentrated on in lectures etc, based on how students performed the previous year.

Workload: Over the past few years, the number and relative weighting of assignments has shifted towards quizzes. The number of assignments is now the minimum amount to ensure the lecturer can monitor progress, give feedback, and correct any areas where some extra revision might be needed. Students have access to a large number of tutorial questions. It is for students to decide how many (if any!) of the tutorial problems they wish to attempt. It is important that students take increased initiative in how much work they want to do, while still having small but reasonable "compulsory" assessment tasks. If students are doing the assignments and tutorials, then the quizzes follow on directly from then, and it is not expected that much additional "study" was required. The quizzes are to ensure that students are keeping reasonably up to date with the tutorials.

Relative marks for assignment tasks: Some comments on the relative workload associated with tasks have been received - eg a 1 hr quiz was worth 5%, but the main lab report, which might have taken you 10 hours, was worth 10%. From one point of view, this is a valid comment, but students should consider another point of view. The quizzes represented 2 weeks' worth of lectures and tutorials, so this starts to even things out. It is regrettable that some students copy, and hence the relative value of take home assignments needs to be relatively low to ensure students pass the course based on their own work, not that of another student.

Marking scheme: Some students have commented that the marking scheme in quizzes and assignments. For an assignment, here is nothing necessarily "special" about getting a straightforward question (nearly) correct or having the right method. All students should be capable of doing that - and hence that is the standard for getting a pass (which is on average about 60%). Students need to show they understand the issue and set the answer out clearly.

For units & significant figures the marking is deliberately harsh to get the message across. It will be emphasised many times during the semester that units are important and marks will be deducted for incorrect use. Previous year results indicate that many students still do not have confidence in units by the end of the semester. Unless marks are deducted for poor units, students will not see the importance of them or try to improve. Units are not difficult - it is just practice.

Some students made a valid point that a silly arithmetic mistake may result in getting 0 for a quiz question - the same as not attempting a question at all. The lecturer does appreciate this concern. However, for relatively straightforward questions in an open book quiz, it is not unrealistic to expect the correct answer. Another aim of the quiz is to provide quick feedback. All quizzes are returned in a week later, with full solutions on the internet. A more detailed marking scheme would increase marking time, delay the return of quizzes and would reduce the number of quizzes that could be offered.

Availability of Solutions: Solutions to tutorials are released about 2 or 3 weeks after the topic is covered in class. Many students ask for them to become available so they can check that their method is OK. Solutions are intentionally delayed to ensure that students attempt practice problems without the temptation of looking at solutions. Students will not have the solutions in front of them in the exam or in a real job, so it is important to develop confidence in solutions now. There are many worked examples given in class for students to learn the appropriate methods. Students are most welcome to look at any other textbook on topic and refer to the solutions given in those texts.

Academic Honesty

The content of this unit of study is fundamental to civil engineering, so it is important that each student can independently demonstrate competency in the syllabus. Working alone and in groups are both important components in developing the required knowledge. Legitimate co-operation between students is highly encouraged; however direct copying of another student's work is plagiarism, unacceptable, and unfair to fellow students, the community and the engineering profession. Any submissions that are identified as unacceptable copies will be marked as unacceptable (zero) with no possibility of resubmission. Students should be wary of giving an assignment to a fellow student, but are highly encouraged to help their colleagues through difficulties. Examples of unacceptable work will be discussed at the first tutorial session. The School of Civil Engineering Statement on Academic Honesty is available at <http://www.civil.usyd.edu.au/current/undergraduate/honesty.shtml>.

Other Information

Late Assignments

Working to deadlines and time management are two of the most important generic skills that one can develop at university. Marks may be deducted for assignments submitted after the deadline for submission. Requests for special consideration should be made on the appropriate form available from the student centre. *Submission deadlines will be strictly enforced.*

Internet Resources

The website for this unit of study is <http://www.civil.usyd.edu.au/courses/civ12201> which can also be accessed via WebCT. It will contain copies of handouts given out during the unit of study and links to various relevant websites.

Email

The University supplies all students with a free email account which can be accessed via <http://www-mail.usyd.edu.au/>. Students should check their university supplied email account regularly, as the lecturer may use email to communicate important information to students. Students can configure their university email account to forward all email to another address of their choice at <http://www.usyd.edu.au/ict/switch/email/forwardemail.shtml>.

University Policies

Students are encouraged to make themselves familiar with University of Sydney policies regarding their candidature, which are available at <http://www.usyd.edu.au/policy>.

Workload

Students are reminded that engineering is a full-time unit of study, and they should expect that the workload for a standard 24 credit point enrolment is of the order of 35 - 40 hours a week (inclusive of timetabled lectures and tutorials). Hence for this 6 credit point unit of study, students should expect that they may have to do about 9 hours a week work, which includes 3 hours of lectures, 2 hours of tutorials, and 3 - 4 hours outside university working on tutorial questions or lab reports per week.

I hope that you enjoy this unit of study and you find it interesting, challenging and informative, and that this year is successful both academically and in any other endeavours that you undertake.

Tim Wilkinson

Senior Lecturer in Civil Engineering
March 2009