Engineering Modelling and Design - Course Outline
ENGR 110: 2016 Trimester 2

This course introduces the role of modelling in the engineering design process. Different modelling techniques will be presented and techniques for evaluating each that can aid design decisions will be demonstrated. Practical work will support the learning of different modelling and simulation techniques.

This document sets out the workload and assessment requirements for ENGR 110. It also provides contact information for staff involved in the course. If the contents of this document are altered during the course, you will be advised of the change by an announcement in lectures and/or on the course web site. A printed copy of this document is held in the School Office.

Learning Objectives

By the end of the course, students should be able to:

1. Explain and follow engineering processes involving specification, design, modelling, analysis and construction to solve engineering problems.
   BE graduate attributes 3(a), and 3(c)
2. Construct simulations of formal models and explain the role of analysis and evaluation in the engineering design process.
   BE graduate attributes 3(a) and 3(c))
3. Prepare a report presenting the outcomes of using a particular model to evaluate a design.
   BE graduate attributes 2(b)
4. Work in a team, applying an understanding of how different skills in a team complement each other.
   BE graduate attributes 2(a)

Expected understanding

Because ENGR110 has the prerequisite that students MUST have passed BOTH ENGR101 and COMP102 in order to enrol, students are expected to be able to write simple programs in Java AND be able to write and compile basic C programs. Students who do not feel they possess these skills should contact the course coordinator immediately.

Textbooks

There are no required course textbooks for ENGR110 in 2016.

One supplementary text for ENGR 110 is: UML in Practice: The Art of Modeling Software Systems Demonstrated through Worked Examples and Solutions by Pascal Roques

[Please wait to determine if you need to buy this book or whether the notes are adequate for you]

Another useful supplementary text on Control Systems (available through the library) is: An introduction to control systems - K. Warwick

Remember: a copyright compliant list of recommended and supplementary readings and resources is available via the course Blackboard site.

Dates, Lectures, Tutorials, Laboratories, and Practical work

ENGR 110 is a trimester 2 course. The trimester starts on Monday 11 July 2016. Lectures end on Friday 14 October 2016. The examination period at the end of the course is 21 October - 12 November.

A schedule of lecture topics, readings, and assignment due dates is available online

Lectures for ENGR 110 are: Monday, Wednesday and Friday 12:00-13:00 MCLT101

There will be 2 hour weekly laboratory sessions and 1 hour weekly tutorials, both starting in the second week. There are a total of 36 hours lectures and 22 hours of laboratories. All laboratories and tutorials will take place in CO145 (unless advised otherwise). A weekly timetable is available, showing the lecture and lab times.

Assignments and Projects

There will be six assignments. Details will be available on the assignments page on the web. All the assignments will

There will be six assignments. Details will be available on the assignments page on the web. All the assignments will address learning objectives 1 to 4 above.

1. Physical modelling.
2. Using a model for Design.
3. Finite State Automata for modeling and designing controllers for a traffic light system and a lift system.
4. Use cases for designing software systems.
5. UML diagrams for modeling and designing larger software systems.
6. Techniques for modeling control systems.

More details about assignment structure, submission, and penalties for late submission are given below.

Workload

In order to maintain satisfactory progress in ENGR 110, you should plan to spend an average of at least 10 hours per week on this paper. A plausible and approximate breakdown for these hours would be:

- Lectures and tutorials: 4
- Labs: 2
- Readings and Lab preparation: 1
- Additional work on the assignments: 3

School of Engineering and Computer Science

The School office is located on level three of the Cotton Building (Cotton 358).

Staff

The course organiser for ENGR 110 is
Elf Eldridge
- Alan Macdiarmid 228
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The other lecturer for the course is
Peter Andreae ("Pondy")
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The Lab Technician for ENGR 110 is
Arthur Roberts.
- arthur.roberts@ecs.vuw.ac.nz

The Academic Tutor for ENGR 110 is
Howard Lukefahr.
- Cotton 261
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Course representatives: TBC

Class facebook group: [www.facebook.com/groups/engr2016][here]

Announcements and Communication

The main means of communication outside of lectures will be the ENGR 110 web area at http://ecs.victoria.ac.nz/Courses/ENGR110_2016T2/. There you will find, among other things, this document, the lecture schedule and assignment handouts, and the ENGR 110 Forum. The forum is a web-based bulletin board system. Questions and comments can be posted to the forum, and staff will read these posts and frequently respond to them.

Assessment

Your grade for ENGR 110 will be determined based on the following assessment weightings:

Item	Weight	CLO(s)*
Six modelling and/or evaluation projects (5% each)	30 %	1,2,3,4
Two terms tests (15% each)	30 %	1,2

Tutorials	5 %	1,2
Final Report, approx 15 pages, due in Exam period	35 %	1,2,3,4

*CLO(s) Correspondence between course learning objectives and assessment.

Tests and Exams

There will be two terms tests, on Wednesday 10 August, and Wednesday 21 September. Both tests will be held from 6pm to 7pm. Each test will be worth 15% of your final grade. If you are unable to get to the test, you should contact the course organiser as soon as possible to make alternative arrangements.

There is NO exam for ENGR110 in 2016, however the final report will be due during the examination period. The examination period for trimester 2 is 21 October - 12 November.

Practical Work

The assignments are intended to take about 3 hours per week, but the actual time required will vary considerably from student to student. The scheduled lab and tutorials sessions will help you start the assignments, but **you will need to spend more time outside the scheduled sessions**. There will be scheduled help-desk times when a tutor is available to answer individual questions about the assignments, and we will also provide on-line helpdesk assistance.

Most of the assignments contain four parts:
- a **Core** part, involves constructing models using the basic concepts and constructs,
- a **Completion** part, which extends the Core part and involves more difficult thinking and may cover additional concepts and constructs,
- a **Challenge** part, which usually involves substantially more difficult modelling and problem solving
- a Reflection part, which involves thinking and writing about your experience of the assignment, to be included in an appendix.

The Core part will be worth around 65% of the assignment, the Completion part will be worth 20%, and the Challenge part the other 15%.

We expect all students to be able to complete most of the Core part, and most to at least attempt the Completion part.The Challenge components are for students aiming for a top grade. If it takes you more than about 6 hours to complete the Core part of an assignment, we suggest that you should not spend additional time on the Completion or Challenge part. It is probably better to spend the additional time reading the textbook, going over your notes from the lectures, going to the tutorials, or working on questions and problems with other students.

Assignment Submission

When you have completed them, the assignments should be submitted via the online submission system.This means that you can submit assignments from the ECS labs or from a computer at home (or anywhere on the internet). You may resubmit as many times as you wish, *but the most recent submission of a file will always overwrite previous submissions* .

All assignments should be submitted as .pdf files. Non-pdf files will not be accepted and submission as a non-pdf format will incur a penalty.

Group Work

Laboratory work will often require working as part of a group, however assignments are all assessed individually.

Assignment Marking and Late Penalties

All the assignments are important for your learning. All assignments will be marked, and will together with the laboratories contribute a total of 30% to your final grade.

We will mark the assignments as quickly as possible; our goal is to have the marks and comments returned within two weeks of the submission time. Your marks and comments on your submission will be accessible via the web: see the links on the Assignments page.

Work submitted late will be subject to a penalty of 10% of the total mark per day.

Use of Turnitin.com

Student work provided for assessment in this course may be checked for academic integrity by the electronic search engine http://www.turnitin.com. Turnitin is an online plagiarism prevention tool which compares submitted work with a very large database of existing material. Turnitin will retain a copy of submitted material on behalf of the University for detection of future plagiarism, but access to the full text of submissions is not made available to any other party.

Plagiarism

Working Together and Plagiarism

We encourage you to discuss the principles of the course and assignments with other students, to help and seek help with programming details, problems involving the lab machines. However, any work you hand in must be your own work.

The School policy on Plagiarism (claiming other people's work as your own) is available from the course home page. Please read it. We will penalise anyone we find plagiarising, whether from students currently doing the course, or from other sources. Students who knowingly allow other students to copy their work may also be penalised. If you have had help from someone else (other than a tutor), it is always safe to state the help that you got. For example, if you had help from someone else in writing a component of your code, it is not plagiarism as long as you state (eg, as a comment in the code) who helped you in writing the method.

Mandatory Requirements

Mandatory course requirements for ENGR110 T2 2016 are:
- Students must complete **four of the six assignments with at least 40%.**
- Students must achieve at least a **D** grade overall for their **final report.**

Passing ENGR 110

To pass ENGR 110, a student must satisfy mandatory requirements and gain at least a **C-** grade overall.

Withdrawal

The last date for withdrawal from ENGR 110 with entitlement to a refund of tuition fees is Friday 22 July 2016. The last date for withdrawal without being regarded as having failed the course is Friday 23 September 2016 -- though later withdrawals may be approved by the Dean in special circumstances.

Student Feedback

A summary of the course feedback provided by students previously for this course is available here.

Rules & Policies

Find key dates, explanations of grades and other useful information at http://www.victoria.ac.nz/home/study.

Find out about academic progress and restricted enrolment at http://www.victoria.ac.nz/home/study/academic-progress.

The University's statutes and policies are available at http://www.victoria.ac.nz/home/about/policy, except qualification statutes, which are available via the Calendar webpage at http://www.victoria.ac.nz/home/study/calendar (See Section C).

Further information about the University's academic processes can be found on the website of the Assistant Vice-Chancellor (Academic) at http://www.victoria.ac.nz/home/about/avcacademic

All students are expected to be familiar with the following regulations and policies, which are available from the school web site:

Grievances
Student and Staff Conduct
Meeting the Needs of Students with Disabilities
Student Support
Academic Integrity and Plagiarism
Dates and Deadlines including Withdrawal dates
School Laboratory Hours and Rules
Printing Allocations
Expectations of Students in ECS courses

The School of Engineering and Computer Science strives to anticipate all problems associated with its courses, laboratories and equipment. We hope you will find that your courses meet your expectations of a quality learning experience.

If you think we have overlooked something or would like to make a suggestion feel free to talk to your course organiser or lecturer.

Course Outline as PDF