

# Engineering Modelling and Design - Course Outline

## ENGR 110: 2015 Trimester 2

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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.

### Objectives

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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)

### Textbook

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There is no required course textbook for ENGR110 in 2015. One of recommended texts 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]



### Dates, Lectures, Tutorials, Laboratories, and Practical work

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ENGR 110 is a trimester 2 course. The trimester starts on 13 July. The examination period at the end of the course is 23 October - 14 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 HMLT205

There will be 2 hour weekly laboratory sessions, starting in the second week. There are a total of 36 hours lectures and 22 hours of laboratories. A weekly timetable is available, showing the lecture and lab times.

### Assignments and Projects

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There will be five assignments. Details will be available on the assignments page on the web. All the assignments will address learning objectives 1 to 5 above.

1. Physical modeling for modeling and designing a lift.
2. UML diagrams for use cases.
3. UML diagrams for modeling and designing larger software systems.
4. Finite State Automata for modeling and designing controllers for a traffic light system and a lift system
5. Techniques for modeling and designing electronic systems.

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

### Workload

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

## School of Engineering and Computer Science

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

### Staff

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The course organiser for ENGR 110 is

Will Browne

- Alan Macdiarmid 418
- +64 4 463 5233 extension 8489
- will.browne@ecs.vuw.ac.nz

The other lecturers for the course are

Elf Eldridge

- Alan Macdiarmid 228
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- elf@ecs.vuw.ac.nz

and

Peter Andrae ("Pondy")

- Cotton 336
- +64 4 463 5834
- peter.andrae@ecs.vuw.ac.nz

The Lab Technician for ENGR 110 is

Arthur Roberts.

- arthur.roberts@ecs.vuw.ac.nz

Course reps: Charlene Leong and Bo Hua "Mona" Ruan

## Announcements and Communication

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The main means of communication outside of lectures will be the ENGR 110 web area at [http://ecs.victoria.ac.nz/Courses/ENGR110\\_2015T2/](http://ecs.victoria.ac.nz/Courses/ENGR110_2015T2/). 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

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

<u>Item</u>	<u>Weight</u>	<u>CLO(s)*</u>
Five modelling and/or evaluation projects	30 %	1,2,3,4
Two terms tests	20 %	1,2
Final Examination	50 %	1,2

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

## Tests and Exams

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There will be two terms tests, on Wednesday 12 August, and Thursday 24 September. Both tests will be held from 5pm to 6pm. Each test will be worth 10% 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.

The timetable for final examinations will be available from the University web site and will be posted on a notice board outside the faculty office. The final examination will be three hours long. No computers, electronic calculators or similar device will be allowed in the final examination. Paper non-English to English dictionaries will be permitted. The examination period for trimester 2 is 23 October - 14 November.

## Practical Work

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The assignments are intended to take about 6 hours over 2 weeks, 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%. The Reflection part is not assessed, though you need to do it.

We expect all students to be able to complete most of the Core and Reflection parts, 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 on the Reflection part, reading the textbook, going over your notes from the lectures, going to the tutorial, or working on questions and problems with other students.

## Assignment Submission

Each assignment will be due at 5pm on the Wednesday of the second full week after the assignment was handed out.

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*.

## 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.

## Plagiarism

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### 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

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Students must complete four of the five assignments with a passing grade.

## Passing ENGR 110

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

## Withdrawal

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The last date for withdrawal from ENGR 110 with entitlement to a refund of tuition fees is Friday 24 July 2015. The last date for withdrawal without being regarded as having failed the course is Friday 25 September 2015 -- though later withdrawals may be approved by the Dean in special circumstances.

## Student Feedback

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A summary of the course feedback provided by students previously for this course is available [here](#).

## Rules & Policies

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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](#)

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