

Engineering Project - Course Outline

ENGR 489: 2015 (Full year) (also used for COMP/ELCO 489, COMP488, COMP588)

This document sets out the workload and assessment requirements for ENGR 489. 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.

Aim

ENGR 489 consists of an individual project which is done under the supervision of one (or more) of our [academic staff](#). The aim is to let you show-case all of the skills you have learnt during your BE degree. In particular, you will design, implement and evaluate a solution to a complex [engineering problem](#). You will also present your solution through a final report, an oral presentation and where appropriate, a practical demonstration.

Objectives

On completing this course, you should be able to:

1. **Design, implement and evaluate a solution to an appropriate engineering problem.** This should demonstrate an understanding of the various trade-offs involved, provide documented evidence justifying those design decisions made and demonstrate technical leadership through innovation. ([3\(a\)](#), [3\(b\)](#), [3\(c\)](#), [3\(f\)](#))
2. **Justify the quality of your solution through effective written and oral communication, and through practical demonstration.** Quality issues include, but are not limited to: the selection of appropriate technology; application of appropriate engineering and professional practices; consideration of real-world issues, such as scalability, reliability, safety and sustainability (where appropriate). ([1\(a\)](#), [1\(b\)](#), [2\(b\)](#), [3\(b\)](#), [3\(e\)](#))
3. **Assemble evidence from a range of sources to compare and analyse the relationship between your solution to the engineering problem and that of similar systems and/or approaches.** Sources include, but are not limited to, books and academic papers, ([2\(b\)](#), [3\(d\)](#))

Note: ENGR 489 is part of the Engineering program at Victoria University of Wellington. BE graduates are expected to exhibit a number of graduate attributes upon graduation. These course objectives contribute to the graduate attributes as indicated above. A full table of these attributes is available at [Graduate Attributes](#).

BE vs BSc(Hon) Projects

The above is primarily for ENGR489 students. An important consideration is the distinction between the project courses taken as part of the BE and those taken as part of the BSc(Hon) or postgraduate diploma. The former requires students to undertake a suitable engineering project, whilst the latter require a suitable research project. There are many similarities between these two types of project, but there are also some important differences.

COMP/ELCO projects are based on the creation of new knowledge through research. Such projects should aim to make novel contributions to the academic research literature. COMP/ELCO students are expected to demonstrate mathematical rigour (where appropriate), and use scientific experimentation to make critical observations. The literature survey for COMP/ELCO projects will typically draw on research papers in journals and conferences. Students should consult with their supervisor(s) and/or the course coordinator if they are unsure as to whether their project is an appropriate COMP/ELCO project.

The rest of this documents is for all ENGR/COMP/ELCO489, COMP488, COM588 students.

Project Selection

The project allocation system will be available for students from Monday the 2nd of March 2015, and you will need to rank the projects you are interested in by midnight Friday the 6th March. You can see the available projects and make your selection by visiting the [project selection system](#). Before making a final selection, you can talk with the project supervisor(s) to get a proper understanding of what is involved. Please feel free to email them to set up a meeting time. Finally, you should expect to know what project you have been allocated on the 13th of March - and commence your meetings with your supervisors during the week 16-21 March.

Proposal

You are required to give a five minute presentation about your research proposal. You must submit the presentation

slides by the end of week 4. Your presentation slides should outline the engineering problem you aim to solve; briefly discuss the approach you will take, including how you will evaluate your solution; and, finally, identify any budget requirements or safety issues. This will generally take 4 content slides.

Preliminary Report

The preliminary report is due on the 10th of July, and you are required to give a five minute presentation at the beginning of trimester two to your specialisation. You can think of the preliminary report as the first 3 chapters of your final report. You need to introduce your project, present the motivation, present complete background and related work sections, plus a reflective analysis of your progress so far, an outline of your plans and a timeline mapping out how you will complete your project. The report should also identify any additional resourcing required. The report should be written in such a way that a non-specialist could easily follow and understand the main ideas and concepts. The preliminary report is expected to contain around eight pages of content.

Final Report

The final report is the critical piece of assessment for ENGR 489. The purpose of the report is to provide a detailed discussion of: the engineering problem; the design and implementation of your solution; the method adopted for evaluating the solution (including any experimental results); and, finally, to highlight and discuss similar problems and their solutions. The final report is expected to contain no more than 20,000 words and no more than 40 pages including diagrams. Front-matter (title, abstract, contents pages etc,) and appendices are excluded from these limits.

Conference and Demonstration Day

A conference day will be held at the end of the examination period in the week 9th Nov --- 13th Nov. All students are expected to attend, and to give a short presentation of their work. The audience will consist of other students, as well as academic staff members and invited industry people. The presentation should be given in such a way that a non-specialist could easily follow and understand what is said. In particular, the presentation should clearly identify the engineering problem, the solution developed and the method used to evaluate the solution. As part of the presentation, students may wish to demonstrate their working product. An examining committee will preside over the presentation, and will be invited to ask questions at the end.

Assessment

Your grade for ENGR 489 will be determined through a holistic assessment of the various reporting items that are submitted. The indicative weightings for the four reporting items are given in the following table:

<u>Item</u>	<u>Date</u>	<u>Indicative Weighting</u>
Proposal slides	27th March	See next
Proposal presentation	30th March - 2nd April	Must pass
Preliminary report	10th July	combined 20%*
Preliminary report presentation (start of trimester two)	13-17th July	
Final report (end of trimester two)	16th Oct	70%
Oral presentation (end of exam period)	13th Nov	10%

* Your final report grade is used in case your final report is better.

Late Submissions

Late submissions will be penalized and extensions will not be given without prior arrangement with supervisors and the course co-coordinator. You should expect a penalty of one grade per day of lateness (i.e. A- would be reduced to a B+).

Note: You will receive formative feedback on your progress report. The purpose of this is to help improve your understanding of the problem and associated issues, and to give some indication of how well you are progressing. The feedback will consist of a letter grade, and may also include written comments from your supervisor(s) and/or other staff members.

Each reporting item will test all three of the course objectives. Each report, and the project as a whole, will be assessed according to the following criteria:

1. **Product:** the design and implementation of the artifact demonstrates a clear understanding of the complex engineering issues involved, whilst the evaluation demonstrates its quality through analysis, experimentation or other appropriate means.

2. **Presentation:** the problem and solution are presented in a clear and understandable fashion. For reports, this includes issues ranging from spelling and grammar, through to clarity of discussion and overall structure. For oral presentations, this includes clarity of delivery, use of appropriate slides or other presentation aids, and overall structure.
3. **Process:** the development of the artifact demonstrates a clear understanding of appropriate professional practices.
4. **Professionalism:** the development of the artifact takes into consideration real-world issues, including scalability, reliability, safety, sustainability, cost, culture, etc.

Team work

Where appropriate, team projects are permitted. In such case, all reporting items must still be individually prepared and, ideally, each student will do a distinct part of the project (distinct being judged by the project supervisor and ENGR 489 coordinator).

Staff

The course co-coordinator for ENGR 489 is [Kris Bubendorfer](#).

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Student Representation: As the projects undertaken in ENGR489 are very diverse we will not have a specified ENGR489 class representative. Instead ENGR489 related matters can be raised at student meetings and elsewhere by any of the student representatives for other 400 level ECS courses.

Lectures, Tutorials and Laboratories

There will be an ad-hoc meeting on March the 2nd - at 3pm in Murphy 632

Regular meetings will be held on Fridays 9-10am (not every week).

A [schedule](#) of lecture topics is available online.

Mandatory Requirements

All assessed work in 489 is mandatory:

- You must give all three oral presentations (proposal, preliminary report and final presentation).
- You must pass the proposal presentation.
- You must submit both the preliminary and final reports.

Tests and Exams

There is no terms test and no examination.

Textbook

There is no textbook.

Workload

In order to maintain satisfactory progress in ENGR 489, you should plan to spend an average of at least 10 hours per week on this paper, spread over the 30 weeks that the course runs (i.e. including mid-trimester breaks, and the mid-year break). During term time, a plausible and approximate breakdown for these hours would be:

- Lectures/tutorials .3 hours per week.
- Project work 9.6 hours per week,

Announcements and Communication

The main means of communication outside of lecture will be the ENGR 489 web area at http://ecs.victoria.ac.nz/Courses/ENGR489_2015FY/. There you will find, among other things, this document, the [lecture schedule](#) and the [ENGR 489 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.

Intellectual Property

Students are required to sign the [intellectual property agreement](#).

Plagiarism

We encourage you to discuss the your project with other to help and seek help with programming details and other problems. 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.

Withdrawal

The last date for withdrawal from ENGR 489 with entitlement to a refund of tuition fees is Friday 13 March 2015. The last date for withdrawal without being regarded as having failed the course is Friday 21 August 2015 -- though later withdrawals may be approved by the Dean in special circumstances.

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.
