Engineering Project - Course Outline

ENGR 489: 2016 (Full year) (also used for COMP/ELCO/CGRA 489, 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 or an academic and industry supervisor. 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 projects, but there are also some important differences.

COMP/ELCO projects are based on the creation of new knowledge through research. Such projects should aim at making 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 projects are appropriate COMP/ELCO projects.

The rest of this documents is for all ENGR/COMP/ELCO/CGRA489, COMP588 students.

Project Selection

The project allocation system will be available for students from **Monday 29th of February 2016**, and you will need to rank the projects you are interested in by **midnight Friday 4th of March 2016**. 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 **11th of March** - and comence your meetings with your supervisors during the week **13-19 March.**

Proposal

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

slides by t**he 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 **8th of July**, and you are required to give a five minute presentation at the beginning of trimester two to your specialisation (the presentation and the report will be assessed jointly). 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 on the **11th 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:

Item	Date	Indicative Weighting
Proposal slides	31st March	See next row
Proposal presentation	4th April - 8th April	Must pass
Preliminary report	8th July	combined 20%
Preliminary report presentation (start of trimester two)	11th-15th July	
Final report (end of trimester two)	~~14th~~ 16th Oct	combined 80%
Oral presentation (end of exam period)	11th Nov	

NOTE: For ENGR489, the 20% weighting for preliminary report and presentation is NOT indicative and will be counted towards the final grade. For COMP489/ELCO489/CGRA489 students, this weighting remains to be indicative.

Late Submissions

Late submissions will be penalized and extensions will not be given without prior arrangement with supervisors and the course coordinators. 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 underlined formative feedback on your progress report. The purpose of this is to help improve your understanding of the problem and associated issues, and to given 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 course coordinators).

Staff

The course coordinators for ENGR 489 are Bryan Ng and Aaron Chen
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- +64 4 463 9998
- bryan.ng@ecs.vuw.ac.nz

- Aaron Chen
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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 **Tuesday 1st of March** at **12:00pm** in **Laby LT118**

Regular meetings will be held on Thursdays 4:10pm-5pm (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. But there is a handbook handbook.pdf.

Workload

In order to maintain satisfactory progress in ENGR 489, you should plan to spend an average of 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: 0.3 hours per week.
- Project work: 9.7 hours per week,

NOTE: It is very important for you to ensure that you put enough time in your project. Your supervisor can give you warnings if your progress is slow due to lack of efforts. After three warnings, the associate dean will arrange a meeting with you to discuss your progress and ways of improvement.

NOTE: Time spent for writing research papers (both conference and journal papers) will usually not be counted for your project. If you plan to prepare a research paper during this project, please seek consent from your supervisor. An approval from Head of School is also necessary.

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_2016FY/. 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.

Ethics Approval (HEC, AEC)

See the website

http://www.victoria.ac.nz/research/support/research-office/ethics-approval/human-ethics

Plagiarism

We encourage you to discuss your project with others 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 11 March 2016. The last date for withdrawal without being regarded as having failed the course is Friday 19 August 2016 -- 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.