

COSC366 Computer Science Research Project

Course Outline

Course supervisor: T. Takaoka
Summer 2011–2012

Note: Scholarships (see §2.1) are available which will cover the full cost of COSC366 (domestic) fees for students whose enrolment is approved before 5:00p.m. Thursday 10th November 2011.

While COSC366 can be credited towards the 360 points total required for your degree, it cannot be counted as part of the 60 300-level points in a single ('major') subject. However, COSC366 can be credited towards the 90 points of 300-level COSC for Honours.

Most information for COSC366 (including this document) will be made available on the departmental course webpage (<http://www.cosc.canterbury.ac.nz/open/teaching/classes/cosc366/>) and also on Learn (<http://learn.canterbury.ac.nz>). You should refer frequently to the relevant web pages for updated information, copies of course handouts, due dates, and discussions about course topics.

1 Course Aims

COSC366 is a 15 point course which is based on a small research project involving at least 150 hours of research work. The project gives students the opportunity to obtain, develop and demonstrate research skills in Computer Science and Software Engineering. Different projects will require and develop different research skills, so it is important to talk to members of the Computer Science & Software Engineering academic staff before committing to a particular project. A project that was awarded a UC Summer Scholarship cannot be used for this course.

Examples of research skills acquired and used in COSC366 projects include:

- Formulating a detailed statement of the problem and objectives.
- Bibliographic searches to obtain information about prior work.
- Analysing research literature to obtain relevant information, identify trends, and produce annotated bibliographies.
- Appreciation of appropriate citation and attribution in research.
- Selection of an appropriate method of solution.
- System design and implementation.
- Use of appropriate tools for data capture and analysis.
- Design and conduct of experiments.
- Evaluation of work done.
- Technical writing and presentation of results for publication.

Having successfully completed COSC366, students will be better prepared to undertake research courses such as COSC460, COSC486, COSC690 and COSC790 or to apply their research skills in an industry context.

All students produce a written report at the end of the course, and this is the major component of the course assessment.

2 Admission

There are no formal prerequisites for COSC366 and admission requires the approval of the Head of Department. Your project will be supervised by a continuing academic staff member

(see: <http://www.cosc.canterbury.ac.nz/people/>). Browsing the web pages of staff members and of CSSE research groups (<http://www.cosc.canterbury.ac.nz/research/>) will give you some idea of the major areas of research activity in the department.

To seek approval for entry to the course, you should discuss available projects with potential supervisors, and then submit the research plan by completing the on-line form at http://www.cosc.canterbury.ac.nz/open/teaching/classes/cosc366/ResearchPlan_2011.pdf . The form must be co-signed by the academic staff member who will supervise your work, and then handed in at Room 332, Level 3, Erskine Building.

Normally, students will satisfy the prerequisites for entry to other 300-level COSC courses:

1. 45 points of 200-level Computer Science
2. 30 points from Mathematics, Statistics or Engineering Mathematics

Admission will not be offered to students whose GPA indicates that they do not have a sufficiently high potential for success in COSC366.

Not every project will be suitable for every student. Some projects may require particular prior knowledge or may be suitable only for students who have already passed particular courses. The project supervisor will assess whether a particular student has the required background for a project. Immediately after enrolment in the course, you must prepare a draft project proposal (see §3.1), and submit it to the supervisor before 5 pm., Friday, 2nd December 2011.

2.1 Fees Scholarships

Scholarships are available which will cover the full cost of COSC366 (domestic) fees for students whose enrolment is approved before 5:00p.m, Thursday, 10th November 2011. In order to receive a scholarship you must complete the relevant form which can be obtained from room 332. Please contact CSSE administration staff at admin@cosc.canterbury.ac.nz or dial 364-2987 x6362, if you have any queries.

3 Assessment

The assessment items for COSC366 are:

Project Proposal	10%	2 nd December 2011
Log	required	10th February 2012
Interim Report	20%	After 75 hours of work
Final Report	50%	10th February 2012
Oral presentation + project demonstration	20%	6-10 February 2012

3.1 Project Proposal

After enrolment in the course, you must prepare a draft project proposal containing 3-4 pages. The proposal should clearly define what you want to research, and also outline the research methodology. A draft project proposal will typically contain the following information:

- The names of the supervisor and student.
- The title of the project.
- Abstract: This provides an outline of the project in about 200 words.
- Background, Research Objectives: This describes the context of the proposed research work.
- Research Methodology: This section explains the theoretical or algorithmic framework you will use, experiments you will conduct etc.
- Timeline: List the important tasks in the research project, and provide either an estimate of the time needed or the expected completion dates for the tasks.
- Bibliography

The proposal length should not be greater than four pages in length, and should be submitted to the supervisor before 5pm on 2nd December 2011.

3.2 Work Log

You must keep a regular detailed log of your activities, recording the hours you have worked in each session and the activities involved or results achieved. Your supervisor will assess your progress at regular intervals. If your log is not maintained to an acceptable standard then you will not be awarded a pass in the course. The preferred format includes a table along the lines of the following showing the hours added, the running total and a brief description of the activity involved:

Hours	Total	Activity
2	2	Literature search
5	7	Tested algorithm-A
...

3.3 Interim Report

The interim report is a short report (3-4 pages) that describes the progress of your research that must be submitted to your supervisor after completion of approximately 75 hours of project work. The interim report must cover

- Project description
- Progress made so far
- An outline of the work that remains to be done
- Updated timeline

3.4 Final Report

Your supervisor will advise you on the appropriate form for your report. It will be similar in length and style to a COSC460 Honours Project report. It should be written to the standards expected for publication in journals or conferences. The University Library contains many relevant books on technical writing. Examples of CSSE technical reports, honours projects and theses are available at <http://www.cosc.canterbury.ac.nz/research/reports> .

A typical report might be structured like this:

1. An abstract which states the key objectives and achievements.
2. An introduction that provides research background, aims and objectives of the project, and an analysis of the literature to date.
3. An account of the work—design, implementation, experiments, etc.—which has been achieved and which will make up the bulk of the report.
4. Conclusions—A summary of the major findings and results as well as an indication on what further work is desirable.
5. A list of all the references you have used.
6. Appendices containing program listings, etc.

Your report will be assessed by your supervisor and another CSSE academic staff member (the examiner), using the following criteria:

- Clarity of objectives
- Review and evaluation of related work
- Justification for research approach (e.g. quality of research design)
- Significance of work reported (e.g. level of originality, quality of solution)
- Extent of work (complexity of topic, level of programming required, etc.)
- Extent to which your own contributions are made clear.
- Soundness of conclusions drawn.
- Research skills demonstrated.
- Report quality (e.g., clarity of presentation and organisation of report)
- Content of log, and progress made

You must submit two hard copies of your report (no binding necessary), one to your supervisor, and one to CSSE administration staff (Room 332 at level 3) before 5pm on Friday 10th February 2012. You must also email a PDF copy as an attachment to admin@cosc.canterbury.ac.nz.

3.5 Oral presentation

Oral presentations and project demonstrations will be scheduled in the period 6th–10th February 2012. The oral presentation will be given to an audience which will include your supervisor and examiner, together with other staff and students. Your supervisor will advise you of the detailed requirements. Assessment will include both the content and delivery of your presentation.

You will also be required to demonstrate your project to a panel comprising of the supervisor and an examiner.

Presentations will be marked using criteria such as the following:

	Excellent	Good	Satisfactory	Poor
Problem identification	3	2	1	0
Research process	3	2	1	0
Level of detail	3	2	1	0
Preparation	3	2	1	0
Holding audience's attention	3	2	1	0
Communicating enthusiasm	3	2	1	0
Clear explanation	3	2	1	0
Use of visual aids, equipment	3	2	1	0
Finishing on time	3	2	1	0
Handling questions	3	2	1	0
Total (out of 30)				

'Problem identification', 'Research process', and 'Level of detail' concern the technical content of your presentation. The other categories are largely concerned with the style and manner of your presentation.

4 Resources

There is no set textbook for the course. Your supervisor will refer you to a selection of relevant resources. Typically, these will include material held in the UC Library and research literature. Course announcements will be made using the Learn LMS (<http://learn.canterbury.ac.nz/>).

5 Other important documents

Attached to this course outline is a summary of some important Computer Science documents (http://www.cosc.canterbury.ac.nz/teaching/impt_docs.html) that apply to students in all Computer Science courses. It is important that you read the summary and all of the documents that it refers to. To reinforce the importance of these documents, we require that all students sign a statement that says that they are aware of the existence of the documents, and will become familiar with their rights and responsibilities as described in the documents.

Enjoy your project—we look forward to working with you!