# COSC480 Project Guide

Contact: 400projectadmin@cs.otago.ac.nz

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## Contents

## 1   400-Level Project Options

There are two 400-level project papers offered in computer science: COSC480 (Applied Project) and COSC490 (Research Project). Both are full-year, 40-point papers.

- If you are enrolled in an Honours degree (BA Hons or BSc Hons), you must take COSC490.

- If you are enrolled in a Postgraduate Diploma (PGDipArts or PGDipSci), you do not have to take a project paper unless you intend to carry on to the one-year MSc or MA by thesis. If you do decide to take a project paper it would normally be COSC480.

- If you are enrolled in a Masters of Applied Sciences (MAppSci), you do not have to take a 400-level project paper (although you must take APPS597). If you do decide to take a project paper it would normally be COSC480.

- If you are enrolled in the first year of a two year Masters degree (MA or MSc), you must take a project paper and it would normally be COSC480.

Honours students are required to take COSC490 as the research component is an important aspect of an Honours degree. This is less of a focus for Postgraduate Diplomas, and Masters projects may be preliminary work for thesis work in the second year of the degree. For these reasons there is more flexibility in the nature of the projects, and so COSC480 is more appropriate.

If you have any questions about which papers to take, please contact 400projectadmin@cs.otago.ac.nz or our adviser of studies, adviser@cs.otago.ac.nz.

**The remainder of this guide is specific to COSC480.** If you are taking COSC490, then there is a separate document with material relevant to that paper. The COSC490 document may also be of use to COSC480 students when planning their assessment criteria and timetable (Section 7). It also contains useful advice about writing and presenting your work.

## 2    Project Timetable

The following table gives the timetable for projects and a summary of the default assessment due dates for COSC480.

| Date | Submit |
| --- | --- |
| 1 March | Project Selection (Section 5) |
| 15 March | Aims and Objectives (Section 6) |
| | Assessment Criteria and Timetable (Section 7) |
| 4 October | All assessment must be submitted |

Notes:

- For COSC480 you can negotiate the assessment schedule *at the start of the project*. See Section 7 for more details.

- Your project choices, in order of preference, should be emailed to 400projectadmin@cs.otago.ac.nz.

- Requests for extensions (with reason) will be considered, but are likely to be treated more favourably the earlier they are made. Such requests should be directed to 400projectadmin@cs.otago.ac.nz, and should be supported by your supervisor.

## 3    Seminars Timetable

A series of seminars on research methods will be given over the first seven weeks of Semester 1. You should attend these seminars – they will provide information and practical advice on various aspect of carrying out research/independent project. The schedule of the seminars is as follows (check the course website for times and venues).

| Seminar | Date | Topic |
| --- | --- | --- |
| 1 | 1 March | Getting underway |
| 2 | 8 March | Causation and correlation |
| 3 | 15 March | Literature review |
| 4 | 22 March | Tooling |
| 5 | 29 March | Research methodologies |
| 6 | 5 April | Statistics |
| 7 | 12 April | Write-up |

## 4    What is a 480 Project?

The COSC480 project is designed to develop and apply your skills by working on a substantial, independent project. The project will give you experience in areas such as problem solving and analysis, time management, software development, experimentation, report writing, and public presentation. You will find these skills important for any career in computer science.

The project should also be seen as an opportunity to develop your skills and abilities, and to apply them to a larger project. The department supplies a range of projects, mostly from our own research groups, sometimes in collaboration with researchers in other departments. Projects cover a wide range of topics, from practical implementations to theoretical analyses, and may be self-contained or part of a larger research effort.

Each project has an associated supervisor, who will be your primary source for advice. In order to get the most benefit from your supervisor you should stick to regular meetings and supply drafts of your work well in advance of deadlines for final submission.

COSC480 is worth 40 points, which represents around two full-time days per week for the whole year. Your interim and final reports will need to reflect the full amount of effort. Some of you may be tempted to work in short bursts over the vacation. Such a strategy is doomed from the start. The most successful projects are those which are worked at consistently every week.

COSC480 projects may take many forms. These include, but are not limited to:

- Research projects such as those undertaken in COSC490.

- Projects which design, develop, and evaluate a significant piece of software

- Projects which produce an animated film, interactive exhibition, or other computer-based work.

- Initial investigations that may form the basis for ongoing research in a two-year Masters degree.

# 5    Choosing a Project

A list of potential project topics will be provided via the paper website. You should choose at least three projects and email your choices, in order of preference, to 400projectadmin@cs.otago.ac.nz. Be sure to include both the project number and title to make sure there is no misunderstanding. You must talk to potential supervisors to learn more about the projects before making your selections. This will let you make an informed decision, and mean that supervisors know who is interested in which projects in order to resolve any conflicts that might arise.

If you have a project of your own you would like to undertake instead, then you must discuss it with the 400-level project co-ordinator, 400projectadmin@cs.otago.ac.nz, or a member of staff who you think may be interested in supervising the project. In the past we have often created special projects so that students can follow their interests. Additionally, many of the staff members have other interests that might be suitable for a project – you can find out about these by talking to them! In any case, suggesting a project that is not part of this list requires the agreement of a potential supervisor.

# 6    Aims and Objectives

You are asked to provide a statement of aims and objectives for your project by 15 March. Your supervisor will help you to do this. The statement of aims and objectives is important because it provides a description of the purpose of a project by which its success will be judged. It also serves as a guide for you. Your project work will suffer if you do not start early with some clear idea of what you are trying to do. It is only too easy to waste several precious weeks feeling around the subject if you have no clear programme.

By *aims* we mean the long-term goals of the project: what should be done by the end of the year. These can be described in two or three sentences. *Objectives* are more precise, short-term goals which provide a timetable for the project. One good way to express these is as a list of points. It may even be possible to suggest target dates for each objective. They must be short, simple and to the point. The whole statement should not be longer than two pages.

# 7    Assessment Criteria and Timetable

The assessment criteria for COSC480 projects are not fixed — given the wide range of projects no single regime can be expected to cover all possibilities. For this reason you are expected to negotiate your assessment criteria and timetable with your supervisor in consultation with the COSC480 co-ordinator. Your assessment must:

- Be decided on at the start of the project, and agreed no later than 15 March.

- Include at least one presentation based component.

- Include a significant written component.

- Be completed no later than 4 October.

| Date | Submit | Assessment |
|---|---|---|
| 8-12 July | Project presentation (15 minutes) | 5% |
| 19 July | Interim report (3,000 words) | 20% |
| 4 October | Final report (8,000 words) | 75% |
| | Total | 100% |

As a starting point you may wish to consider the COSC490 assessment regime:

Many COSC480 projects use this template, but it may not be appropriate to all forms of project. Your presentation component(s) could include one or more of

- A 15 minute talk as in COSC490.

- A demonstration of your software to an audience.

- A short tutorial on how to use software you have developed.

Your written component(s) could include one or more of

- Research reports as in COSC490.

- Requirements analysis, software design, and testing documentation.

- Reports on user studies and evaluations.

- Technical and end-user manuals for software you have developed.

- An analysis of a research area and identification of areas of future work for Masters students.

You may also wish to consider other forms of assessment such as

- Provision of your software as an application either as an installable package, online, or through an app store.

- The exhibition or performance of an animated film, other work, or installation you have produced through your project.

You need to consider, however, how the project will be assessed and graded. This will be done in consultation with your supervisor and the COSC480 co-ordinator, and may require markers to be assigned early in the process. In general your work will be marked by two members of academic staff other than your supervisor.

### The Assessment Schedule

You must work with your supervisor and the project co-ordinator to produce an assessment schedule by 15 March. Note that this is the deadline to have the schedule *agreed upon*, not just to have something written for discussion. The assessment schedule should include

- A list of assessments, including some form of presentation and a significant written component.

- The percentage weighting for each piece of assessment.

- A brief description of the requirements for each piece of assessment, including an estimate of length.

- An explanation as to why the assessment components have been chosen, and why they are appropriate for the project.

You should consider having some form of interim assessment around the middle of the year. This is valuable in providing you with feedback, and with motivation to work steadily throughout the project. You should not, however, split the assessment too finely. If you do, you risk spending too much time reporting

on your work rather than actually doing it. You should also be realistic about what you will achieve in a given time, taking into account other coursework requirements.

For presentation-based components keep in mind that you will need an audience. If you schedule these at the same time as the COSC490 presentations (8-12 July), then they can be timetabled with those. If you wish to present work at other times (such as a demonstration or exhibition at the end of the project), then you need to explain who you will be presenting to and ensure that they will be available.

# 8 Report Writing

The majority of your assessment will be from a significant piece of written work, usually a final report on the project. We know that some students, despite having put in a lot of effort into their project, produce poor reports and it is the report that is seen by the markers. It is, therefore, worth putting in the effort to write a good report. The markers do not have access to your supervisor's knowledge of the project nor to the time you spent debugging instead of writing. Your main report will be marked by two independent markers neither of whom will be your supervisor and your supervisor's role in the marking process will at most be an advisory one. It must be clear from the report what work you have done and what results you have achieved. It is especially important in the case of group projects to make it clear what part is your contribution and what is not. In the case of a practical implementation, it is important to make the computing content clear: how your project fits in, the reasons for implementation decisions, the design of data structures and algorithms, possible improvements and so on.

## Do

- Provide adequate examples showing how your program behaves (if applicable) and, most importantly, to convince the marker that it works.

- If appropriate, describe and argue for your choice of data structures and algorithms – don't forget that this is a Computer Science project so this issue is important.

- Tell us what you are trying to achieve. Pay particular attention to a clear statement of your objectives in the introduction. Avoid jargon, don't overuse acronyms and define clearly any of the technical terms you use. The best advice is to assume that your reader is a critical postgraduate student.

- Plan the presentation of any experimental data carefully. Detailed experimental data should generally be relegated to an appendix – in text presentation should be in a form that the reader can easily appreciate, for example a summary table or graph.

- Report on negative as well as positive results of your work.

- Start writing early. Good reports normally require *at least* a month of concentrated effort.

- Ask your supervisor to proofread rough drafts. Somebody who is not familiar with your work should also read your drafts. Friends are useful here.

- Use a spelling checker, but do not imagine that this is a substitute for proof reading.

- Look at good examples of previous years' project reports. A selection of these are provided on the course Web site.

## Do Not

- Just write a history of what you have done. A common form of poor report spends much time tracing out the author's steps in doing the project. It is better to organise discussion around issues, results, and interpretation.

- Tell us a sad story. Do not say how many days were wasted because the computer was down, or the proper documentation did not exist, or the cat got sick. Problems of theoretical importance that influence the direction of the project should be reported of course, but life's day-to-day hassles should not. Formal mechanisms exist for handling genuine medical and other emergencies – talk to your supervisor and the project coordinator, 400projectadmin@cs.otago.ac.nz, for more details.

- Sacrifice time that should be spent on preparing your report to an attempt to fix an incomplete or buggy implementation. Your project cannot pass, let alone get a reasonable grade, without a decent report. On the other hand, the graders understand that it is not always possible to iron out all the implementation problems within a fixed time period.

## Production of the Report

LaTeX is often recommended for the production of reports, as it is designed to produce professional technical documents. Other options such as Microsoft Word are fine as well. No matter what software you use, *be sure to learn how to use it effectively.* Learn how to manage citations and bibliographies; use cross-references to sections, figures, and tables; typeset mathematics correctly; and use semantic rather than ad hoc layout (Section headings rather than manually putting in 16 point bold Arial text etc.).

It is important to remember that Murphy's law usually prevails. As the deadline approaches everything that can possibly go wrong will. Keep a backup, or better yet two backups, of all your important files. Make that three, one of which is outside of NZ. In the final stages of preparation it is important to allow sufficient time for the seemingly endless cycle of proof-reading, spelling checks, correction, supervisor's reading, supervisor's corrections, proof-reading again etc. If this is left to the last minute then your supervisor, who has many other responsibilities, will not have time to provide adequate feedback, and your report will lack the polish and punch that graders are looking for. This can have a serious effect on your final grade.