CIVL4022, 4023, 4024 & 4025
Honours Thesis and Engineering Project Guidelines

Key information in 2014
- Thesis/Project topic selection form is due by the end of Week 1, Semester 1
- Weekly meetings with your supervisor are required, except by mutual agreement
- A 15-page individual “research plan, literature review, & progress report” is due by the end of Week 10 in Semester 1 (10% of final mark)
- Group oral presentations and posters are required in Week 12 of Semester 2 (15% of final mark)
- Two hard copies of individual thesis/project report are due by the end of Week 13, Semester 2 (60% of final mark).
- The maximum length of the thesis/project report is 50 pages (from Introduction to References including tables and figures, but excluding appendices)

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1. Introduction

1.1 Are you eligible to enrol in the “Thesis and Project” course or not?

You must pass 30 Credit Points of third year courses before you enrol in the “Thesis and Project” Course. If you have any queries regarding eligibility, please contact the Undergraduate Administration Officer, **Mrs Cynthia Papangelis** (PNR Room 336) in the first instance.

It is expected that the Thesis/Project will be conducted over two consecutive semesters, and that for the majority of students Thesis/Project will start in Semester 1. As a result, students who are expecting to graduate in Semester 1, 2015 should start their Thesis/Project in Semester 1, 2014. Under special circumstances a student may start Thesis/Project in Semester 2 with the permission of the course coordinator and the School’s Director of Learning and Teaching (undergraduate). If you are considering this option you should discuss it with the course coordinator at least one semester before you intend to begin.

It is also possible to complete Thesis/Project in one (first) semester. However, this will only be permitted under exceptional circumstances. Students cannot use the limited time as a reason to apply for an extension of the date of the final thesis submission.

1.2 “Honours Thesis” or “Engineering Project”?

Students with an HWAM* greater than 65 must be enrolled in Honours Thesis, CIVL4022/CIVL4023, and everyone else must be enrolled in Engineering Project, CIVL4024/CIVL4025. Note your enrollment in thesis may be adjusted so that all students with an HWAM greater than 65 are enrolled in Honours Thesis, and everyone else is enrolled in Engineering Project. In both courses the aims and objectives, learning outcomes and methods of assessment will be identical. The requirement for an Honours Thesis is that it must contain a significant (original) research component. Many Engineering Project topics will also involve significant research, but this is not essential, and the work involved can be expected to be more straightforward.

For students enrolled in Honours Thesis the award of honours will be made on the basis of your HWAM. If the honours rule change has occurred while you have been enrolled, that is you first enrolled in your current degree before 2009, you are also entitled to have your eligibility for honours assessed according to the old rules. According to the old rules Honours was based on the GWAM*, and anyone achieving a GWAM>65 would receive an Honours degree. This means that if you are enrolled in Engineering Project and you obtain a GWAM > 65 you will still be awarded an Honours degree, provided you started your degree before 2009.

Honours Thesis is expected to be undertaken in groups of 2, and Engineering Project in groups of 3. Students enrolled in Honours Thesis must select from the list of honours projects that will be provided. In some cases it may be possible for an Engineering Project student to work with an Honours Thesis student on an honours project. For this to happen you must apply by email to the course coordinator. A final decision will not be made on groups and topic allocation in Week 1 if the group consists of mixed Honours Thesis and Engineering Project students.

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*HWAM means Honours Weighted Average Mark and is calculated using the formula HWAM = SUM(Mark × Credit Point × Year_Level)/SUM(Credit Point × Year_Level) incorporating each unit of study attempted (1000 level units not counted and research theses weighted double).

*GWAM means Overall weighted average mark and is calculated as follows GWAM = SUM(Mark × Credit Point × Year_Level)/SUM(Credit Point × Year_Level) incorporating each unit of study attempted.
1.3 Background

The unit of study provides a great opportunity for students to conduct original investigation and research work. Students will generally work in groups, although the planning and writing of the thesis itself will be done individually; i.e., a separate thesis must be submitted by each student. Only in exceptional circumstances and after approval by the course coordinator and the academic supervisor concerned will a student be permitted to undertake a project individually. Working arrangements are informal, as are the relationships between the students and their supervisor.

1.4 Learning Outcomes

- Ability to formulate and plan a personal research project (Assessed in Progress Report and Thesis/Final Report)
- Originality, ingenuity and initiative in dealing with critical research issues. (Assessed in Thesis/Final Report)
- In-depth knowledge of a specialised area within the discipline (Assessed in Progress Report, Seminar and Thesis/Final Report)
- Ability to formulate an appropriate method for investigating a specific research question. (Assessed in Progress Report and Thesis/Final Report)
- Ability to analyse raw data, draw appropriate conclusions and present those conclusions in context, with due consideration of methods and assumptions involved. (Assessed in Thesis/Final Report)
- Ability to document and report research work undertaken in a format appropriate for academic literature. (Assessed in Progress Report and Thesis/Final Report)
- Ability to deliver a research presentation that is clear, confident and engaging to an academic audience. (Assessed in Seminar and Thesis/Final Report)

1.5 Course Workload

This Thesis and Project course is a major task and is to be conducted with work spread over most of the academic year. A task of this nature cannot be carried out adequately in a shorter time. The course management procedures are intended to ensure that each student works on this task from the beginning of the year, that this work progresses satisfactorily, and that you benefit from the advice and guidance provided by your project supervisor.

Students are reminded that the course carries a weighting of **6 Credit Points** per semester. This means for the average student, just expecting a Pass grade, that **10** hours of effort should be put into this course each week. The heavy workload of the course means that you should be enrolled in no more than 18CP of other courses for each of the two semesters you are undertaking this course. (i.e., three courses plus Thesis and Project per semester)

It is a myth that you can catch up on your Thesis/Project over the break between semesters. You may find that your supervisor and technical support are not available during this period. Ultimately it is your responsibility to plan and execute the work required within the allocated time.

You must plan your research work to put in the effort evenly during both the semesters.
2. Selecting a Topic and supervisor for Your Thesis/Project

2.1 General Information

As indicated in Section 1.2, Honours Thesis is expected to be undertaken in groups of 2, and Engineering Project in groups of 3. The possible Thesis/Project topics are divided into four streams, namely, Structures/Materials, Fluids/Environmental, Geotechnical and PEM/Construction. To meet specialization requirements, students in a specific stream must select a thesis/project topic from the same stream. Unless permitted by the course coordinator students in a specific stream must form a group with students in the same stream. For example, a PEM/Construction student may not form a group with a straight Civil Engineering or Combined degree student.

At the commencement of the semester in which the course commences, students must consult with a potential staff supervisor as to the suitability of any topic before submitting the Thesis and Project Selection Form, which will be available in Week 1 of Semester 1 2014. Please be advised that individual academic staff will only supervise a limited number of students to maximise the quality of their supervision. Please submit one form per group only to the course coordinator. The nominated topic will be allocated to your group only after it has been signed by the supervisor and approved by the course coordinator.

Students can come up with their own topic or have a project sponsored by an external company. In either case, they will need to find an internal academic staff member from the School of Civil Engineering as the main supervisor.

Each student can join one group only. You may discuss your potential topic with different supervisors. Only one supervisor can sign the topic selection form. Having two or more supervisors sign multiple forms will void your selections. Those students who have asked multiple supervisors to sign different forms will be assigned with a topic by the course coordinator in Week 2. In some serious situations, deduction of Management of Project mark (15% of final mark) may apply.

If you do not have a group or a topic selection form signed by your supervisor in Week 1, you will still need to submit your form with at least three preferred topics/supervisors to the course coordinator by the end of Week 1. For those students with a stream they will need to select at least three preferred topics within the corresponding stream. For those students without a stream they will need to select at least one preferred topic in each stream. Students without a topic in Week 1 will be assigned with a topic/supervisor based on their preference, academic performance and suitability in Week 2.

2.2 Deadline for choice of thesis topic

To allow adequate time for performance of the investigation, the research topic must be decided by the end of the first week of the first semester. Any students without a registered research topic by the end of the FIRST week of the commencing semester, and who fail to contact the course coordinator will have a topic and supervisor nominated.

You must submit your “Thesis and Project Selection Form” to the course coordinator (Room 406) before 5pm Friday in Week 1.

Note: Only one hard copy of “Thesis and Project Selection Form” per group is required.

2.3 Choice of your topic

- **Direct choice of topic:** Students should select topics that they particularly want to investigate. A list of thesis/project topics offered by potential supervisors will be available. A topic will be allocated to
your group if the topic selection form is signed by the supervisor and accepted by the course coordinator by the end of Week 1. Please note a final decision will not be made on topic allocation in Week 1 if the group consists of an Honours Thesis student and an Engineering Project student, or students from different streams.

- **Safety net:** Students unable to find an investigation topic and/or supervisor should nominate 3-4 preferred topics and submit the form to the course coordinator by the end of Week 1. These students will be allocated a research topic and a supervisor in Week 2. Topic allocation for groups with mixed Honours Thesis and Engineering Project students or students with different streams will be decided in Week 2.

### 3. Research Plan, Literature Review & Progress Report

#### 3.1 Drawing up your research plan

The “Research Plan & Progress Report” should consist of (at least) problem/task specification, literature survey, proposed methodology, expected outcomes, progress in first semester, and proposed timeline. The length of the Research Plan should be about **15 pages**. These sections are explained in more detail below.

A significant part of the final thesis is typically adapted from the research plan.

#### 3.2 Problem/Task specification

The first part of the report is to define the problem/task to be tackled. This part of the research plan should set out your research questions/topic, establish the objectives/motivations for carrying out the topic, and describe the significance of the research. This is the project specification stage. The scope of each project is defined by its title and the written research plan. The scope must be such as to limit the subject matter of the investigation project to ensure that the study has adequate depth. It is the responsibility of the supervisor of each investigation project to ensure that the scope is neither too narrow nor too wide.

Students are encouraged to have a detailed discussion of their Research Plan with their supervisor. However, students must keep in their mind that it is their responsibility to make the Research Plan, Literature Review & Progress Report, not the supervisor.

#### 3.3 Literature Review

The second (and major) part of the report is an extensive study of the state of the art, including all the current and recent literature relevant to the topic of the investigation. The contribution of the literature review to the final report will vary from topic to topic. This exercise is essential to frame the research questions and scope of the thesis/project.

A thorough and critical literature review is an essential component of your thesis/project and the research plan. A good literature review should have a thorough survey of what has been done through critical comparison and summary of different approaches. It should identify the trends, evidence, conclusions and gaps in the extant literature relating to the research problem; have in-depth coverage of the major contributions of significant studies and articles to the body of knowledge under review with focus on the research problem; and critically assess the literature by identifying the major contributions of the studies reviewed and pointing out any methodological flaws or gaps in research, inconsistencies in theory and findings, and areas or issues that need further study. The main purpose is to establish the significance of the topic and the underlying theoretical framework. It is important to let the readers understand the link between your proposed study and previous research.
Further details on how to get started with your review are explained in the sections below.

3.4 Proposed Methodology

The third part is an in-depth study of particular aspects of the topic. You must clearly indicate the methodology that will be used in your thesis/project. The methodology will vary with the topic. For more subjective management topics it is important to identify here the theoretical framework underpinning your research. The method appropriate for each investigation topic is to be chosen in consultation between the student and the supervisor.

The research method section should clearly describe what data is needed and how to obtain it; what method is going to be used and why, e.g. numerical analysis, experiment, case studies or survey. For the research method chosen, you need to elaborate how you are going to ensure the validity and reliability of your research findings. For qualitative research topics in management it is important that you read the literature on research methods to explore available methods and their validity.

3.5 Expected Outcomes

In the report, students are required to indicate the expected outcomes of their research. Of course, these are only "Expected" outcomes, and the final conclusions may well turn out to be quite different. Nevertheless, it is important to know what your final goals are.

3.6 Progress in the first 10 weeks

In the “Research Plan and Progress Report”, students have to report what they have done in the first 10 weeks. In addition to the contents mentioned in sections 3.2~3.5, a brief summary of progress and any preliminary results are expected to be reported in this section.

3.7 Proposed Time Schedule

In the report, a proposed timeline for each stage must be included. This will also help both students and their supervisor to check the progress of the project by themselves.

3.8 Submission of Research Plan

Students are required to submit their Research Plans to their thesis/project supervisors by the end of Week 10 in the first semester. Students must submit a signed cover sheet.

4. Management of Your Thesis/Project

4.1 Initial preparation

In carrying out your thesis/project, it is expected that individual resourcefulness will be developed in prosecuting and reporting on the investigation. In contrast to normal coursework, the investigation project will:
vary for each student so that everyone has to work on their own,
be less well defined so that students have to find their own way throughout the investigation,
be more complex than previous work so that students will have to plan ahead.

4.2 Information management

One of the important skills of a professional engineer is the developed ability to plan ahead. To plan ahead the engineer must be able to manage a large amount of published and unpublished information. Setting up a suitable database (or filing system) is the basis of information management. Keeping a diary recording observations, measurements, or conversation records is also highly recommended. Your project database has to handle information you do not yet have, the details of which you do not know, and the total amount of which you cannot even guess. To achieve this you must have planned flexibility and expandability.

The recommendation is that you start with an A4 ring binder or arch file. You should equip it with cards or Manila dividers with projecting index tabs. Use A4 size plastic pockets with binding holes for small items as well as normal A4 size items in which you do not want to punch holes. Your initial indexing system should look like:

- Thesis/Project brief
- References to publications examined
- Extracts or copies of publications
- ..............etc

As the information builds up it will become necessary to expand the system to more files and to subdivide the headings.

4.3 Conducting a literature survey

It is important for a researcher to know what has been done and recent advances in the area. To achieve it, you need to conduct a literature survey. "Literature review" normally forms a chapter in your thesis, which is not simply a summary of what has been done, but also demonstrates your critical reading. The aim of a literature review within a thesis is to show how the existing knowledge relates to your thesis and how it supports (or otherwise) the “story” you are presenting.

4.4 Getting started

Once you have been assigned a thesis/project supervisor and topic, you must decide what you want to achieve and how to do it. You need to have discussions with your supervisor. You also need to make a research schedule for your thesis/project. Then, start the work immediately.

4.5 Completing your thesis/project

The "literature review" conducted in the first semester will form the basis of one of the chapters of your thesis/project. This will probably need to be modified in the light of your work during the second semester and your improving understanding of the thesis/project topic.

To get the maximum benefit from the course you should discuss your work regularly with your supervisor and show them drafts of your writing and results, and ask for their comments. You are also encouraged to discuss your work with your peers for their comments (especially if you are working in the same group or similar areas).
Writing up the thesis/project report is a critical part of the course. It forces you to organise your thoughts and to understand the thesis/project more deeply. This takes time, and the writing of the first draft should not be left to the last week. Frequent interaction with your supervisor can be especially beneficial at this stage.

Finally, you need to have a final proof reading before you submit your thesis/project report.

### 4.6 Suggested timeline

- **At the start of the semester in which you commence the unit of study**
  - Examine the list of proposed topics offered by potential supervisors
  - Choose a topic, or area of interest
  - Talk to the proposed supervisor

- **Timeline-The First Semester**
  - **Week 1**: submit a Thesis and Project Selection Form to the course coordinator by the end of Week 1.
  - **Week 2**: Arrange regular and frequent consulting times with your assigned supervisor. It is suggested to be at least once a week (it is your responsibility to organize this).
  - **Week 2-10**: Write up your literature review, research plan & progress report– what you have done in semester 1 and what you plan to do in Semester 2
  - **Week 10**: Literature review, research plan & progress report (~15 pages) must be submitted to your supervisor by the end of Week 10 in Semester 1.
  - **Week 13**: Feedback on the literature review, research plan and progress report might be collected from your supervisor in Week 13.

- **Vacation between two semesters**
  - Make more progress during the break.

- **Timeline-The Second Semester**
  - **Week 3**: Discuss your draft “thesis/project report” with your supervisor, and start writing.
  - **Week 10**: Provide your supervisor with a copy of your draft Thesis/Project Report for comments
  - **Week 12**: Give an oral presentation (in group) and poster to report your research outcomes. Selected posters will be included in the Faculty of Engineering & IT Conversazione.
  - **Week 13**: Hand in two (one hard-bound and one soft-bound) copies of your thesis/project report to the course coordinator by the end of Week 13. Alternatively, you may submit 2 soft-bound copies by the deadline and 1 hard-bound copy one week later. Also submit a PDF version to your thesis/project supervisor.

* Required submission

### 5. Supervision

The major role of the supervisor is as an adviser to help you go through the research project with maximum learning outcomes. He/she will provide necessary help in various aspects. However, it is your responsibility to advance the project, and put in the effort to achieve the final product.

Individual academic staff members have their own style of supervision, which also varies from project to project. It is important for students to understand the style of your supervisor, when you approach him or her for the selection of your topic.

Past experience with final year projects has shown that students who do not frequently and regularly consult with their supervisor (and consequently benefit from their assistance and guidance) usually submit theses/project reports of a low standard. It is **compulsory** that a student should consult with their supervisor at least once a week, unless special agreements are made between supervisors and students. Students should
take to these meetings as much evidence of their work as the supervisor requires for assessing the students’ progress.

6. Presentations

6.1 Oral presentation

- General information

Each student will be required to report on the progress in their thesis/project investigations by participating in the presentation of a short group seminar to their fellow thesis students and their supervisors. The seminars will be scheduled in Week 12 of the second semester. The seminars will be run in parallel sessions, depending on the field of specialization.

Advice on the timing and location of the seminar presentations will be given at least one week before the commencement of the seminar presentations. All students enrolled in the thesis course are expected to attend their fellow students’ presentations.

Failure to deliver a scheduled seminar will result in a FAIL grade for the course.

Group presentations will be of approximately 15-20 minutes duration, including questions.

- Seminar presentation guidelines

The format of your seminar presentation is as follows:

- The chair will introduce you to the audience, asking the audience to welcome you.
- You then have your allotted time to deliver your presentation.
- At the end of your presentation the audience should applaud and the chair will call for questions to be directed to you.
- At the end of question time the chair will formally invite the audience to thank you for your presentation.

When preparing your seminar presentation please bear in mind the following points:

- You should plan to talk for no longer than the time allowed for your presentation.
- The time allocated for your presentation is strictly limited. One (1) minute before the end of that allocated time you will be given a warning by the session chair. At the end of your allotted time, the chair will stop you and your presentation might suffer accordingly.
- You must not start your presentation until you have been introduced by the chair.
- Time will be allowed for questions and discussions at the end of each presentation.
- You should prepare a powerpoint presentation or other visual aids in advance and use these to structure and illustrate your presentation.
- Do not prepare 35mm slides.
- Prior to your seminar you should discuss with your supervisor which style of presentation is most suitable, and what slides/transparencies you should prepare.

When preparing overhead transparencies and power-point presentations:

- Avoid too much detail: make sure that everything on your transparency can be easily read from the back of the seminar or tutorial room. Each transparency/slide should illustrate a key point in your talk.
o Make sure the graphs, etc are prepared using a good solid colour pen. Avoid pencil.
   o If you are using printed material, make sure it is enlarged sufficiently to be clearly legible at the back
     of the room. The minimum font size should be 18 pt.
   o If using your own handwriting, print neatly for clarity.
   o The use of different colours will often improve the clarity of your presentation.
   o If you want to use power-point for your presentation, you MUST make sure your power-point
     presentation is working correctly before the Seminar Session begins. In general, you are not allowed
     to use your own computer unless special approval is obtained from the course coordinator.
   o Number any transparencies.

6.2 Poster presentation

- General information

Each Thesis/Project group will be required to submit a poster on their research work, in Week 12 of the
second semester.

Failure to submit a poster as required will result in a FAIL grade for the course.

Posters should be prepared for an A1 page size. Posters should be written for an audience of professional
engineers.

- Poster presentation guidelines

When preparing your poster presentation please bear in mind the following points:

   o Your poster should be printed on an A1 page in portrait format.
   o On the poster you should state your Thesis/Project title, your name and your supervisor’s name.
   o The poster should summarise your project work, including the main conclusions.

7. Writing up your thesis/project report

7.1 Presentation of thesis/project report

Although the research/investigation/design work will be conducted in groups, the planning and writing of
the thesis or project report itself will be done individually; i.e., a separate and unique thesis or project report
must be submitted by each student. The only identical items that may appear in the theses submitted by
members of the same group are Tables of factual information, such as experimental data, Appendices, and
Figures illustrating experimental or computer data that have been obtained jointly. The direct copying of
chapters or passages of text from chapters is not permitted. Mark penalties may be applied if such copying is
detected. The University has established policies on plagiarism and a code of conduct for academic honesty.
Details may be found at http://sydney.edu.au/engineering/student-policies/academic-honesty.shtml and

Some of the practices which are considered dishonest include:

- Copying some or all of another student’s assignment or thesis without acknowledgement
- Copying from textbooks, journal articles, websites or other copyrighted materials without
  acknowledgement (trying to pass off other peoples’ ideas as your own)
- Recycling reports, theses or portions of theses from students from earlier years
- Fabrication of data
Engaging another person to complete an assessment or examination

All submitted documents must be typewritten using single or 1.5 spacing on A4 paper, and printed single-sided. Two hard copies of the final thesis/project report must be submitted to the course coordinator before the deadline (Week 13 of the second semester) and a PDF version should be submitted to the supervisor. At least one copy must be bound with a hard cover and permanent binding (hard-bound copy) but the second copy may have a soft cover and spiral binder (soft-bound copy). Alternatively, you may submit 2 soft-bound copies by the deadline and 1 hard-bound copy one week later. The thesis/project report should be planned and written so that not only can a research worker in the same field make direct use of the thesis/project report, but also a practicing civil engineer can follow its arguments and understand its implications. The thesis/project report should be written in the third person.

Students must make their own arrangements for taking and printing photographs, and printing and binding the thesis/project report. Word-processing software and laser printers are available for use in the C.A. Hawkins Computing Laboratory. Students should keep a personal copy of their thesis/project report, as the copies submitted will be retained by the School, and will not be returned.

7.2 Thesis/project report arrangement

The purpose of the thesis/project report itself is to record and interpret the information compiled during the research investigations, and to act as the vehicle for communicating this to the interested reader. In the following sections, some guidance is given on the planning and writing of the thesis/project report itself. This, of course, is not mandatory, and indeed should be adapted by each student to suit the particular thesis problem and the investigations made. Projects which comprise a significant proportion of design work may differ substantially in their final written form compared to a traditional research thesis. For example, design projects may include substantial design drawings in addition to descriptive text and figures.

The arrangement of the thesis/project report should be designed to suit the research problem and the work done. One general form of arrangement is shown below, but many other arrangements are possible.

- Title Page (See Appendix C)
- Student disclaimer and Department disclaimer (See Appendix D)
- Summary
- Table of Contents
- Introduction
- Body of thesis/report (with suitable Chapter Headings)
- Discussion and Conclusions
- Acknowledgments
- References
- Appendices

The SUMMARY is usually the first thing read, and it should allow the reader to decide whether to read the rest of the thesis or not. It therefore summarises the scope of the thesis/project report, the work done, and the conclusions reached, often in less than 200 words.

The INTRODUCTION forms the first chapter of the thesis/project report, and is usually the next part read after the Summary. It describes the problem investigated, and its significance and relevance to the field of civil engineering into which it falls. It is common to summarise here any previous work which has been carried out on the subject, although it is more usual to place any detailed survey and review of the published literature in a separate chapter. The Introduction often concludes with a summary of the significant points discussed, and sometimes with an indication of the development of the subject matter presented in the body of the thesis/project report.
The body of the thesis/project report usually consists of several chapters which contain the main presentation of the work. These chapters may be chosen by subdividing the thesis investigations into various activities, and may have such titles as:

- Literature Review
- Theory
- Experiment
- Comparison of Results

or other suitable titles may be chosen. Alternatively, the chapters may be chosen by subdividing the thesis problem according to its subject matter, and each chapter may deal with several of the activities listed above. Design projects will no doubt differ in format to the above.

The **Literature Review** should contain a critical review of the published literature on the thesis topic which reveals the strengths and weaknesses of current knowledge. It should not be a mere catalogue. Similarly, any discussions in the other chapters (and in the **Discussion** and **Conclusion**) should be written in a critical and constructive fashion. It is one of the purposes of the thesis work that it should encourage the student to develop a facility for the critical assessment of their own work and that of others.

The Engineering and Fisher libraries contain many references, citation indexes and CD-Rom and on-line databases which are indispensable for undertaking a satisfactory literature review.

The **Discussion** and **Conclusions** form perhaps the most important chapters of the thesis, and are often the next read after the summary or the **Introduction**. The implications of and the conclusions and recommendations arising from the material in the body of the thesis should be fully presented and discussed, even if some repetition is involved. It is important to the reader that the **Conclusions** be complete and self-contained, so that the significance and relevance of the work can be appreciated without referring to the preceding chapters.

The **Discussion** and **Conclusion** sections should address the implications of the thesis for theory and practice, discuss the limitations of the current work, and make recommendations for further study.

The **Acknowledgments** may be used to recognize significant contributions by people other than the students, or any financial or material assistance.

The **References** should be given in a standard form (**The Harvard reference style is a preferred style**), and should include such details as: author’s name, title, journal, volume number, publisher, date and page numbers. When many symbols are used, these should be listed alphabetically in the **Notation**. Many symbols will be common to the literature on the subject (and Reference 3 may be consulted). When the thesis is highly mathematical, it may be convenient to place detailed calculations in Appendices, and to use brief summaries of these where required in the body of the thesis. When computer programs do not form an essential part of the body of the thesis but are worth recording, then they should be documented in the Appendices.

The **Appendices** serve to record those details that are not absolutely necessary to the development of the body of the thesis, or complex descriptions that could detract from the readability of the thesis. They may include:

- Detailed mathematical calculations and derivations
- Computer Programs
- Experimental Observations
- Design Drawings
7.3 Planning the thesis/project report writing

While one purpose of the thesis/project report is to record the information compiled during the thesis/project work, the presentation of a disordered array of facts to the readers requires a prodigious memory and effort on their part before they can make use of the information. It is therefore necessary that the student should so digest and interpret the information that a minimum of effort is required of the reader. The key to this is the identification of the underlying patterns of logical association of the information, and the establishment of these patterns in the mind of the reader. This is most easily achieved if the pattern of the thesis/report itself reflects these logical associations.

Many types of logical pattern may exist in the thesis/project work, such as chronological, spatial, geographical, or in fact any sequence which develops logically out of the subject or of the work done. Less obvious patterns include patterns of importance, or progressions from the familiar to the unfamiliar, or from the readily understood to the more difficult, or even patterns established by repetition.

These patterns, if not already obvious, can usually be discovered when the information to be presented has been classified. This can be done by first listing all the topics required by the subject (and excluding all those not required). These topics can then be divided into subtopics, and further subdivided if required. For each subtopic, a list of ideas to be presented can be prepared. By this stage some of the patterns will be evident, and the arrangement and ordering of the subtopics and ideas can begin. Other patterns will suggest themselves during this stage, and the final arrangement achieved will reflect several of these patterns. Further discussion of this process is given in Reference 4.

The arrangement produced is a preliminary plan of the thesis. It provides a framework for writing the thesis, and a Table of Contents as well. It should be prepared before thesis writing commences, although it is usually modified as writing progresses.

7.4 Writing up your thesis/project report

The thesis/report itself may be written around the thesis/report plan. Each idea summarised in the plan may become a paragraph or more. Each paragraph should be planned by first listing the different points to be made, and then arranging them so the relationships between these and the central idea become clear. Each point requires a sentence or more, and these can be suitably combined to form the paragraph. The logical ordering of the sentences will ensure a coherent paragraph, while an appropriate arrangement of ideas will allow the reader to move easily and naturally from paragraph to paragraph.

The objective of the student should be to achieve clarity in the mind of the reader. The writing should be concise rather than verbose, and should use simple sentences in preference to very complicated ones which may obscure the point. The judicious use of well designed figures will allow the student to reduce the written text, and will facilitate the reader’s understanding. The use of colloquialisms, slang, or jargon should be avoided, and only common abbreviations should be used. The use of footnotes should also be avoided. The thesis should be written in the third person, with the exception of the Acknowledgments section.

Specific advice on writing effective sentences and paragraphs can be obtained from Reference 4, while detailed information on vocabulary, grammar, style and punctuation is contained in References 5 and 6. Reference 7 is particularly useful for vocabulary.

7.5 Format of thesis/project report

All students are required to follow the basic format of the thesis/report. Failure to do so may result in the return of the thesis/report to the student without assessment. The specifications given below shall be followed unless otherwise agreed by the course coordinator on the recommendation of the supervisor:
• The maximum length of the Thesis/Project report is 50 pages (including tables, figures and references, but excluding appendices).

• The text of the research report shall be typed in a font size equivalent to Times New Roman 12 point. The line spacing shall be 1.5 lines.

• The size of the paper shall be A4, except for illustrative materials such as drawings, maps and printouts, which may be larger. Such materials when included in the body of the Thesis/Report shall be folded in such a way as to fit within the A4 bindings.

• The margins on each sheet shall be 30mm on the left-hand side, 20mm on the right-hand side, 20mm at the top, and 20mm at the bottom.

• There should be no header for pages. The only footer for a page should be the page number on the bottom right hand corner.

• There shall be a title page, a student disclaimer and a Department disclaimer.

• A copy of the Summary is to be included.

• Pages (including pages of diagrams or tables etc.) shall be numbered consecutively.

• Diagrams, tables, etc. with proper captions, shall appear on pages close to where reference is first made to them.

• All figures and tables should be numbered according to the chapter in which they appear. (e.g. The first figure in Chapter 4 is numbered Figure 4.1, the first table in the same chapter is numbered Table 4.1.) Photographs on single weight paper shall be securely fixed in the Thesis/Report.

• All illustrations should have captions. The caption of a figure/photo should be below the figures/photo, while the caption of a table should be located above the table. All illustrations should be referred to in the text.

• Students may not use the University crest.

7.6 Useful references for thesis/project report writing

The references listed below are held in the Engineering Library.


The following are also recommended for students pursuing qualitative research projects.

8. Assessments

The final mark of the thesis/project is made up of the following components.

<table>
<thead>
<tr>
<th>Items</th>
<th>Weight</th>
</tr>
</thead>
<tbody>
<tr>
<td>Research Plan &amp; Progress Report</td>
<td>10%</td>
</tr>
<tr>
<td>Oral presentations and Poster</td>
<td>15%</td>
</tr>
<tr>
<td>Management of project</td>
<td>15%</td>
</tr>
<tr>
<td>Final thesis/project report</td>
<td>60%</td>
</tr>
<tr>
<td>Total</td>
<td>100%</td>
</tr>
</tbody>
</table>

- The “Research Plan Literature Review and Progress Report” will be assessed by the principal supervisor.
- The final thesis/project report will be assessed by at least 2 markers. The 1st marker is to be appointed by the School of Civil Engineering and may not be the thesis/project supervisor. Supervisors may mark the submitted theses/project reports of their own students as the 2nd marker. However, the supervisor may only contribute up to 40% of the thesis/project report mark. A third assessor will be used if there is a significant difference (>15%) between the two initial marks or one of the two initial marks is above 90% (inclusive) or below 49% (inclusive).
- Seminar and Poster presentations are to be assessed by at least 2 appointed staff members, one of which may be the supervisor. An average mark will be used.
- Late penalty of 5% per day (including weekends) will be applied to any overdue submissions.
Appendix A: Assessment Criteria for Presentation and Poster

School of Civil Engineering
CIVL4022 4023 4024 and 4025 Thesis and Project
Presentation and Poster Assessment Sheet

Thesis/Project Title:
Thesis/Project group:
Assessor:

Apparent Level of Academic/Technical Achievement (/5)
(0-2) Fail: not satisfying the criteria for a Pass.
(2.5) Pass: Competent completion of a substantial body of work (260 hours) involving basic competencies for a graduate engineer
(3.5) Credit: Competent completion of a substantial body of work involving application of some specialised knowledge and specialised procedures (in addition to basic competencies) and critical assessment and interpretation of results
(4) Distinction: Competent completion of a substantial body of work involving application of some specialised knowledge and specialised procedures, and involving substantial student initiative and student contribution to the planning of the investigation and critical assessment and interpretation of complex results
(4.5) High Distinction: As for Distinction, plus substantial student contribution to the development of new specialised procedures based on advanced concepts and critical review of results to produce new insights.

Effectiveness of Presentation (/5)
- General structure of presentation: logical ordering of information and development of arguments
- Technical correctness and depth
- Communication of a meaningful message
- Interest
- Style of delivery: voice projection/speed/clarity/vocabulary…)
- Connection/rapport with audience
- Distillation and communication of main ideas and results.

Effectiveness of Poster (/5)
- General layout: logical ordering of information and development of arguments
- Technical correctness and depth
- Communication of a meaningful message
- Interest
- Distillation and communication of main ideas and results.
Appendix B: Marking Scheme for Thesis/Project Report

Grade levels progress from left to right: To reach High Distinction level on each criterion, the student must first meet the requirements of Pass, Credit and Distinction.

<table>
<thead>
<tr>
<th>CRITERIA/GRADE</th>
<th>Fail &lt; 50%</th>
<th>Pass 50-64%</th>
<th>Credit 65-74%</th>
<th>Distinction 75-84%</th>
<th>High Distinction 85% +</th>
</tr>
</thead>
<tbody>
<tr>
<td>ORIGINALITY &amp; PERSONAL CONTRIBUTION __/10%</td>
<td>Work does not meet The University’s Academic Board Policy</td>
<td>The work is the students own; where it is not is indicated by acknowledgment; meets requirements found at <a href="http://sydney.edu.au/engineering/student-policies/academic-honesty.shtml">http://sydney.edu.au/engineering/student-policies/academic-honesty.shtml</a></td>
<td>Places new results in a credible research context</td>
<td>Makes a valuable contribution to the topic</td>
<td>Shows an original understanding which interests the wider engineering community; suggests new directions for further research/design development</td>
</tr>
<tr>
<td>COMMAND OF SUBJECT __/10%</td>
<td>Does not link theory to research question; uses set readings to develop topic</td>
<td>Describes and uses theory to inform research/design question</td>
<td>Demonstrates understanding of topic; uses models to inform research/design aim</td>
<td>Compares and contrasts several theories; reveals strengths and weaknesses of complex theoretical models</td>
<td>Critically analyses competing theoretical models; use the literature review to demonstrate theoretical insights</td>
</tr>
<tr>
<td>INTRODUCTION __/5%</td>
<td>Is absent or is poorly structured or lacks essential elements</td>
<td>Contains a structure; describes research/design project generally</td>
<td>Makes specific statements about the research/design field; introduces key authors; links aim to existing research/design work</td>
<td>Analyses literature to indicate gap in existing research/design work; outlines scope of the study and provides some rationale for the research/design project</td>
<td>Provides sound rationale for the research/design project; contextualizes project aim; well structured and sequenced</td>
</tr>
<tr>
<td>LITERATURE REVIEW __/15%</td>
<td>Is too short; lacks detail and analysis; does not cite important work</td>
<td>Reports the literature; quotes paraphrases and summarizes appropriately; shows a competent grasp of key issues</td>
<td>Has a clear structure and groups literature into themes relevant to the research/design topic; makes a clear link to own project</td>
<td>Provides a comprehensive and analytical examination of topic; makes links with research/design methodology; demonstrates sound understanding of key issues</td>
<td>Critically analyses literature; uses the review to create a rationale for the whole thesis; demonstrates a scholarly grasp of the literature; appraises the relevant literature</td>
</tr>
<tr>
<td>METHODOLOGY __/15%</td>
<td>Uses inappropriate research/design methods; lacks a structure or argument</td>
<td>Describes research/design methods and materials used so that they could be repeated; methods show a structure and might yield appropriate data</td>
<td>Draws on published research to provide a rationale for research/design methods; links methods and results sections logically</td>
<td>Derives methods from an analysis of strengths and weaknesses of existing research/design work; provides sound rationale for research/design work</td>
<td>Uses innovative methods; discusses methodology limitations</td>
</tr>
<tr>
<td>RESULTS __/10%</td>
<td>Obtains insufficient data to yield results or to fulfill research purpose</td>
<td>Obtains sufficient reliable data to help answer the study purpose; supports data with figures and tables</td>
<td>Provides reproducible data in logical order to reflect the research aim; figures &amp; tables are integrated into results with clear written legends</td>
<td>Processes complete, precision data with the appropriate analytical technique; links results to research aim/question; discusses sources of error;</td>
<td>Uses best processing of data, including innovative use of tables and figures in response to research questions; processes data to develop theory</td>
</tr>
<tr>
<td>DISCUSSION / CONCLUSION __/25%</td>
<td>Cannot reasonably explain results</td>
<td>Makes links to results with basic reasoning; states some usefulness of own research</td>
<td>Substantiates research/design claims with references; compares and explains (un) expected results with published results; suggests further work related to topic</td>
<td>Clearly interprets results; links to a theoretical understanding from the literature; anticipates criticism; identifies limitations to study and how they might be resolved</td>
<td>Uses results to critically interpret the theory/research supporting the study; explains how results advance the field; reveals an original understanding of own work</td>
</tr>
<tr>
<td>PRESENTATION FORMAT &amp; REFERENCES __/10%</td>
<td>Writing does not clearly communicate message</td>
<td>Writes well; contains sections and subsections and a contents page; correctly employs departmental formatting and referencing guides</td>
<td>Writes in a consistently clear style without grammatical errors</td>
<td>Writes analytically; brings together all sections into a cohesive document</td>
<td>Uses the resources of written communication similar to a published research paper.</td>
</tr>
</tbody>
</table>
Appendix C: Thesis/Project Report Title Page (next page)
Thesis/Project Title

A Thesis (or Report)
Submitted in Partial Fulfillment of the Requirements
For the Degree of
Bachelor of Engineering (/Commerce/Science/...)
In
Civil Engineering (stream if applicable)
By

Student Full Name
Student ID

Supervisor: Title and Full Name

School of Civil Engineering
University of Sydney, NSW 2006
Australia

October 2014
Appendix D: Disclaimers

Student Disclaimer
The work comprising this thesis (project report) is substantially my own, and to the extent that any part of this work is not my own I have indicated that it is not my own by acknowledging the source of that part or those parts of the work. I have read and understood the University of Sydney Student Plagiarism: Coursework Policy and Procedure. I understand that failure to comply with the University of Sydney Student Plagiarism: Coursework Policy and Procedure can lead to the University commencing proceedings against me for potential student misconduct under chapter 8 of the University of Sydney By-Law 1999 (as amended).

Departmental Disclaimer
This thesis (project report) was prepared for the School of Civil Engineering at the University of Sydney, Australia, and describes [one sentence summary of your research]. The opinions, conclusions and recommendations presented herein are those of the author and do not necessarily reflect those of the University of Sydney or any of the sponsoring parties to this project.