

ELEC4121

Undergraduate Thesis - Part B



UNSW

THE UNIVERSITY OF NEW SOUTH WALES

School of Electrical Engineering
and Telecommunications

Equivalent courses: TELE4121, PHTN4121

COURSE OUTLINE - Session 1, 2009

1. Course Staff

Thesis supervisor: same staff who supervised the student in Thesis Part A

Thesis coordinator: Dr. Toan Phung, room EE107, toan.phung@unsw.edu.au

2. Course Details

Credits: This is a 6 UOC course. However it is important to note that in the WAM (Weighted Average Mark) calculation for awarding Honours degree, this course is considered to be a 13.5 UOC, level 4 course. The expected workload is 10-12 hours per week throughout the 12 week session.

Contact hours: Regular meetings with the supervisor, typically about 30 minutes weekly. In addition, the thesis usually involves experimental work and thus requires laboratory assistance from the supervisor and/or technical staff.

Consultations: Technical inquiries about the thesis work should be directed to the thesis supervisor whereas general administrative inquiries should be directed to the thesis coordinator.

3. Course Information

Aims: The thesis is usually undertaken in the last two sessions of the BE degree program. Students are to undertake directed laboratory and research work on an approved topic under the guidance of an academic supervisor. Generally, the thesis involves the design and construction of experimental apparatus, software simulations or models with laboratory tests.

This course constitutes the second of the two-part thesis work (parts A and B). Thesis A involves a detailed literature search and reviews of the background for the chosen topic, familiarisation with the tools or equipment required for the project, some preliminary development work, and formulation of a research plan. This prepares the student for the detailed project work undertaken in Thesis B in the immediate following session.

The thesis is a good introduction to work in industry and research, and is an important indicator of how well students are able to utilise what they have learnt throughout their course. It also plays an important role in the final grading of degrees.

Prerequisite: ELEC4120 Thesis A.

Equivalent courses: TELE4121, PHTN4121.

Old courses: This course replaces previous courses ELEC4911 (Individual Thesis Part B) and ELEC4915 (Group Thesis Part B).

4. Learning outcomes

After the successful completion of the course, the student will be able to:

- Apply appropriate skills, tools and techniques to solve or research an engineering problem.
- Appreciate the various facets and practical issues involved in such a process.

Graduate attributes are the skills, qualities, understandings and attitudes a university agrees its students will develop during their program of study. Some faculties including Engineering have contextualised agreed UNSW-wide Graduate Attributes according to their disciplines and professional areas. The course delivery methods and course content address a number of core UNSW *graduate attributes*; these include:

- The skills involved in scholarly enquiry, in particular, the appreciation of and ability to indulge in research.
- An in-depth engagement with the relevant disciplinary knowledge in its inter-disciplinary context
- Development of analytical and critical thinking.
- Ability to engage in independent learning.
- Information literacy - skills to appropriately locate, evaluate and use relevant information
- Development of effective communication skills
- The skills required for collaborative and multidisciplinary work
- An appreciation of and responsiveness to change

Please refer to <http://www.ltu.unsw.edu.au/content/userDocs/GradAttrEng.pdf> for more information about graduate attributes.

5. Assessment details

The normal practice is that the thesis is marked by the supervisor and one assessor. Their marks are equally weighed. If there is a significant difference between the marks, then a second assessor will be appointed. The assessment will take account of the following:

- The thesis report.
- Open Day demonstration
- Overall performance on the project

The thesis report must be individually written even for cases where a group of students work on the same topic. Details about the criteria and marking guidelines for evaluating the report are provided on the course web site.

6. Course Schedule

A written thesis report on the work performed is to be submitted to the EE&T School Office by 12pm Tuesday of week 12 of the session (2/6/09). Two copies are required. The student must attend and exhibit his/her thesis work at an Open Day held in the School on the Friday of that week.

7. Resources for Students

Course website:

- <http://scoff.ee.unsw.edu.au/thesis/thdex.html> All information about this course is available from this link which is regularly updated. You should check this website frequently. Of particular importance are the guidelines for writing the thesis report.

Recommended text(s):

- UNSW Learning Centre, Thesis Writing Guide. <http://www.lc.unsw.edu.au/thesis/index.html>

Further Text(s) and Reference(s):

- To be specified by supervisor (related to particular thesis topic)

8. Additional Information about the thesis

Resources

The thesis gives you the opportunity to take on a project on your own, to produce a self contained and rounded piece of work and write it up for others to assess and use. While the project is yours alone, you will need to obtain advice, information and assistance from others, for example your supervisor, technical officers responsible for laboratories, or computing and workshop staff.

Before carrying out any research it is important to be aware of what work has been done by other researchers. You can ask the Library staff for assistance with the available resources and how to access them. The Internet has become a major source of information for research activities. Students should make as much use of this valuable resource as possible.

What to do

Regular meetings with your supervisor are important, especially during the early stages when it is important to check that what you are doing is indeed what is required. If you want to contact your supervisor outside a regular meeting time leave a message at the School office or at your supervisor's office arranging a time to meet. (Pre-arranged consultations are often more effective). You can also contact your supervisor by telephone or email. Their email address can be found on the school website <http://www.eet.unsw.edu.au>.

Having completed Thesis Part A, at this stage you should have a clear idea what you are going to do and what tasks have got to be performed on the way to achieving your goal.

It is a good idea to draw up a development schedule and allocate times for each task and important stages or project milestones. The time duration of each task should be carefully checked to ensure it

is realistic and, in particular, allows sufficient time for tasks that are critical for the success of the project. For example, ordering components or if equipment is constructed, get the drawings to the workshop as soon as possible. Workshop time is always limited and long delays are frequently experienced. Discuss what you want with the Workshop Foreman with the aim of simplifying your design or modifying existing items.

You are expected to complete your thesis work at the end of the session, prepare an Open Day demonstration and submit your Thesis Report. It is wise to keep all these milestones in mind as you work to bring your chosen topic to fruition.

Keep careful notes and write up as you go. The importance of keeping good notes is understood by all of us who have been frustrated by losing an important reference or vital information about an experiment. Careful note taking can also simplify the final Thesis Report write-up.

Start writing-up as soon as possible - Day 1 is not too early. This is good advice because writing-up often helps to clarify ideas and can suggest some additional investigations to pursue. It is better to make this kind of discovery early rather than later. Furthermore, writing-up is a major task that should not be rushed.

Try to have your draft complete well before submission date and discuss it with your supervisor before producing the final version. Transforming the draft into the final version requires considerable organisation. Typing, drawing of figures, copying and binding all take longer than you think, and word processors, printers and photocopiers can all break down during production - and often do. Allow at least a week for the normal contingencies (e.g. proof reading and the correction of typing errors), and for other problems (e.g. failed equipment and delivery delays). Equipment failure at 4:00am the morning the report is due is not an adequate reason for late submission.

Thesis submission

Two copies of the thesis report, prepared in accordance with the specification given below, are to be submitted to the School Office not later than the deadline as specified in the course schedule. **Students who do not submit by the deadline will receive an Absent Fail (AF) for Part B. Even if the thesis is incomplete, it must be submitted. Requests for special consideration should be submitted as for all other courses through the Registrar.** An extension of time may be granted after consideration of the thesis report and only under exceptional circumstances beyond the student's control. For further details see document "*Procedures Concerning Thesis Withdrawal, Suspension and Time Extension*".

Thesis Report Specification

- Two copies of each thesis/group thesis report must be submitted
- Paper must be A4 size (210 x 297 mm)
- Thesis must be typed or prepared using a wordprocessor. You are encouraged to use both sides of the paper.
- Margins must not be less than: 25mm (left and right edges, before binding), 25mm (upper edge), and 20mm (lower edge).
- The report must be spiral bound (at your own cost), and must include a title page headed:

THE UNIVERSITY OF NEW SOUTH WALES
SCHOOL OF ELECTRICAL ENGINEERING AND TELECOMMUNICATIONS

then: Title of Thesis/Project

Topic Number (if applicable)
Name of Author
Bachelor of Engineering (or other degree for which the thesis is submitted)
Submission Date (month and year)
Supervisor: (followed by name)

- All sheets must be numbered. The main body of the thesis must be numbered consecutively from beginning to end. Other sections must either be included or have their own logical numbering system.
- Formulas and other items difficult to type may be neatly hand-written in permanent black ink.
- Graphs, diagrams and photographs should be inserted as close as possible to their first reference in the text. Rotated graphs etc are to be arranged so as to be conveniently read, with the bottom edge to the outside of the page.
- Photographs must be permanently attached to sheets at least along their left edge. Double sided adhesive may be used to attach photographs. Photographs printed on A4 size lightweight paper may be bound directly into the thesis.
- Computer programs and engineering drawings should be bound into the thesis, usually in an appendix.
- CD may be attached to the back cover of the thesis folder using self adhesive tape or in a secure pocket.
- The author of the thesis is responsible for the preparation of the thesis before the deadline, proofreading the typescript and having corrections made as necessary.
- All students must submit a thesis summary sheet with their thesis report. This summary sheet is designed to assist in determining the overall input by students into the thesis work. Please note that a separate summary sheet must be submitted by individual student, even if part of a group submitting a group thesis. The guidelines for completing the summary sheet and the summary sheet form can be downloaded from the course website.

Thesis Open Day

At the end of the course students are required to demonstrate their thesis work and to answer questions from staff and students. It is compulsory for all students including those with topics of a theoretical nature to be present on the Thesis Open Day.

Usually the Thesis Open Day is held on the last Friday of the session and demonstrations are normally carried out in the School laboratories. You should prepare a *poster* with appropriate diagrams and extracts from your thesis to help in the explanation of the overall project as well as giving suitable demonstrations of particular aspects of your achievements. The template for the poster and some examples of work by previous students are available on the course website. When planning your Open Day presentation remember that, in addition to your assessors, many visitors will be third year students seeking information to help them choose their own thesis topic. Typically the Open Day times are from 10.00am to 2.00pm subject to change. Should you have classes on that day leave a note in the laboratory indicating when you will be available.

If Things Go Wrong

If you start having serious problems, don't ignore them or stop working; the problems won't go away. Talk over your worries with your supervisor to see what you can do to get going again. If you are still not able to resolve the problems, then see the thesis coordinator, the Director of Academic Studies in EE&T or the Student Counseling and Careers Unit. The Learning Centre also offers advice and support on these matters. Often some advice or perhaps reducing the scope of the project can get you working effectively for the rest of the course.

Thesis Withdrawal

A student will be permitted to withdraw without failure from the thesis up to the end of Week 4 of the second session of their enrolment in the course. For further details see document "*Procedures Concerning Thesis Withdrawal, Suspension and Time Extension*".

9. Other Matters

Academic Honesty and Plagiarism

Plagiarism is the unacknowledged use of other people's work, including the copying of assignment works and laboratory results from other students. Plagiarism is considered a serious offence by the University and severe penalties may apply.

All submitted reports and assignments must have an attached cover-sheet that declares that the work detailed in the report/assignment is entirely that of the named student(s) only. The form is available from the EE&T School web site.

Some guidance on plagiarism is provided here. For more information about plagiarism, please refer to <http://www.lc.unsw.edu.au/plagiarism>.

What is Plagiarism?

Plagiarism is the presentation of the thoughts or work of another as one's own.* Examples include:

- direct duplication of the thoughts or work of another, including by copying material, ideas or concepts from a book, article, report or other written document (whether published or unpublished), composition, artwork, design, drawing, circuitry, computer program or software, web site, Internet, other electronic resource, or another person's assignment without appropriate acknowledgement;
- paraphrasing another person's work with very minor changes keeping the meaning, form and/or progression of ideas of the original;
- piecing together sections of the work of others into a new whole;
- presenting an assessment item as independent work when it has been produced in whole or part in collusion with other people, for example, another student or a tutor; and
- claiming credit for a proportion a work contributed to a group assessment item that is greater than that actually contributed.†

For the purposes of this policy, submitting an assessment item that has already been submitted for academic credit elsewhere may be considered plagiarism.

Knowingly permitting your work to be copied by another student may also be considered to be plagiarism.

Note that an assessment item produced in oral, not written, form, or involving live presentation, may similarly contain plagiarised material.

The inclusion of the thoughts or work of another with attribution appropriate to the academic discipline does *not* amount to plagiarism.

The Learning Centre website is main repository for resources for staff and students on plagiarism and academic honesty. These resources can be located via:

www.lc.unsw.edu.au/plagiarism

The Learning Centre also provides substantial educational written materials, workshops, and tutorials to aid students, for example, in:

- correct referencing practices;
- paraphrasing, summarising, essay writing, and time management;
- appropriate use of, and attribution for, a range of materials including text, images, formulae and concepts.

Individual assistance is available on request from The Learning Centre.

Students are also reminded that careful time management is an important part of study and one of the identified causes of plagiarism is poor time management. Students should allow sufficient time for research, drafting, and the proper referencing of sources in preparing all assessment items.

* Based on that proposed to the University of Newcastle by the St James Ethics Centre. Used with kind permission from the University of Newcastle

† Adapted with kind permission from the University of Melbourne.

Continual Course Improvement

Students are advised that the course is under constant revision in order to improve the learning outcomes of its students. Please forward any feedback (positive or negative) on the course to the course convener or via the Course and Teaching Evaluation and Improvement Process.

Administrative Matters

On issues and procedures regarding such matters as special needs, equity and diversity, occupational health and safety, enrolment, rights, and general expectations of students, please refer to the School policies, see <http://scoff.ee.unsw.edu.au/>