

# ELEC4120

## Undergraduate Thesis - Part A



# UNSW

THE UNIVERSITY OF NEW SOUTH WALES

School of Electrical Engineering  
and Telecommunications

Equivalent courses: TELE4120, PHTN4120

### COURSE OUTLINE - Session 2, 2009

#### 1. Course Staff

Thesis supervisor: To be nominated by the student (together with thesis topic)  
Thesis coordinator: Dr. Toan Phung, room EE107, [toan.phung@unsw.edu.au](mailto:toan.phung@unsw.edu.au)

#### 2. Course Details

**Credits:** This is a 6 UOC course. It is important to note that in the WAM (Weighted Average Mark) calculation for awarding Honours degree, this course is considered to be a 4.5 UOC, level 4 course. The expected workload is 10-12 hours per week throughout the 12 week session.

**Contact hours:** The thesis component of the course consists of 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:** About the thesis work, technical inquiries should be directed to the thesis supervisor whereas general administrative inquiries should be directed to the thesis coordinator.

#### 3. Course Information

**Aims:** This course is undertaken in the second last session of the BE degree program. Its purpose is for students 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 first 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 following session.

A list of thesis topics offered by the school is published each year and can be viewed on the EE&T thesis/project database web site. Students are to make their own selection. Usually, the topic chosen is influenced by the students' future career directions. Note that some topics offered on the list are of a general nature, requiring the topic to be defined in discussion with the supervisor. Many topics can be modified to cater for specific student interests. There is provision for topics not on the

published list to be suggested by students or industry. However, it is necessary to find a member of staff who is prepared to act as a supervisor (or co-supervisor) of such a topic.

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.

Overall, at the end of the course students should:

- Have developed detailed background knowledge of the chosen topic area as a basis for developing their own ideas and program of work in Thesis B.
- Understand the general infrastructure requirements of engineering projects including laboratory, workshop, computing facilities, information systems and OHS requirements.
- Gained an appreciation of the role of thesis supervisors play in quality assurance.

**Prerequisite:** ELEC3117 and 120 units of credit.

**Following course:** ELEC4121 Thesis B. This is a 6 UOC course but in the WAM calculation for awarding Honours degree, this course is considered to be a 13.5 UOC, level 4 course.

**Equivalent courses:** TELE4120, PHTN4120.

**Old courses:** This course replaces previous courses ELEC4910 (Individual Thesis Part A) and ELEC4914 (Group Thesis Part A).

#### **4. Learning outcomes**

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

- deliver a professional seminar presentation and a written report on their chosen research topic outlining the motivation, background and selected research methodology that will be used in Thesis B.
- successfully proceed on to the design and synthesis tasks of thesis B for their chosen research topic.

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

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

## **5. Teaching strategies**

- One introduction lecture by the course coordinator – to explain thesis requirements, procedures, available resources, and assessment scheme.
- Regular meetings between supervisor and student – to discuss and advise on the thesis work.
- Laboratory sessions throughout the session – to assist students in the experimental work.

## **6. Assessment details**

There are two components of the assessment:

|                 |                    |
|-----------------|--------------------|
| Thesis seminar: | 70% overall weight |
| Written report: | 30% overall weight |

The assessment will be carried out by the thesis supervisor and the thesis assessor whose marks are equally weighed. The assessor is an academic staff assigned by the School. The same assessor will be assigned for Thesis B. More details about the criteria and marking guidelines are provided on the course web site.

Apart from their own presentations, students are required to attend at least six other seminars as a requirement for satisfactory completion of Thesis A.

## **7. Schedule**

| ACTIVITY  | DATE                    | COMMENT                 |
|---|-------------------------|-------------------------|
| Thesis Seminar                                      | 6-9 October 2009        | Location and time TBA   |
| Deadline for return of<br>“Seminar Attendance Form” | 1 pm<br>13 October 2009 | Submit to School Office |
| Deadline for submission of<br>Thesis A report       | 1 pm<br>13 October 2009 | Submit on-line          |

## **8. 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.

### **Recommended text(s):**

- UNSW Learning Centre, Thesis Writing Guide.

### **Further Text(s) and Reference(s):**

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

## **9. Additional Information about the thesis**

### **How to nominate a thesis topic**

The EE&T thesis database lists all the current thesis topics that can be taken by students. It can be found on the following web site:

<http://scoff.ee.unsw.edu.au/document/thesis/thesisTopicSelection.htm>

Once you have chosen a topic you like, and you have spoken to the supervisor of that topic and he/she has agreed that you are able to do the topic, you can then come to the school office and pick up a “*Topic Nomination Form*” which then needs to be signed by you and your supervisor.

### **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**

While most of your actual thesis work will be carried out in the second Session, four hours/week have been timetabled for the thesis in the first Session. It is important that you take full advantage of this time (remember you are expected to supplement the nominal hours with at least an equal amount of your own time).

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, either at the University or (with permission) at home. Their email address can be found on the school website <http://www.eet.unsw.edu.au>.

Defining a topic is difficult, but it is probably your most important task. Once you have a clear idea of what is required, you can then analyse the alternative courses of action available for achieving your goal. However, if you have the wrong problem then no amount of brilliant analysis or design will achieve the required objective.

Once you have defined your problem, review what has been achieved before, and list what alternative courses of action or methods of solution are available. Analyse the alternatives and decide which of them is the most appropriate for the task in hand. 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.

### **Thesis seminar**

During **week 11**, you are required to give a Seminar presentation describing your work on the topic.

Plan your presentation to last about 20 minutes plus 10 minutes for questions and introducing the speaker. By this stage you will be knowledgeable in your topic, but you should present the material so that it can be understood by the fourth year students attending your seminar. Go at a steady pace and practice the right emphasis and timing by speaking into an audio recorder or even at the bedroom wall. Practice will give you confidence and remove some of the nervousness.

The thesis seminar might have the following outline:

- Thesis/group thesis definition
- Literature review
- Description of preliminary work
- Outline and timetable schedule for work in Thesis B in the following Session.

Technical skills are very important, but just as important is the ability to talk about your work in an informative and convincing way. The seminar provides the opportunity both to inform and to demonstrate your communication skills. Your talk should be addressed both to your examiners who will need to know details about your progress with the topic, and to students and staff members having a more general interest in the project.

Student seminars will take place at the times given in the Timetable at locations to be advised. The duration of each seminar will be 30 minutes including time for questions, for group thesis seminar, 45 minutes. The student giving the seminar must provide a one page typed "Summary Sheet" that introduces the topic area to those present. You are also required to be the chairperson for the seminar that follows yours even if it takes place on the following day. (See "Advice to Chairperson" document on the course web site). This is an important function and students must ensure that they perform this task.

PowerPoint slides or Acrobat PDF for presentation on a data projector are recommended. Presenters bring their presentation files in a format compatible with one of the above applications, with the files stored in a CD-ROM or a USB memory stick. Alternatively, you can bring your own laptop.

In addition to giving a seminar, you are required to attend and assess seminars given by at least six other students. "Seminar Assessment Sheets" will be issued to each student and these must be completed and returned either to the School Office or to the supervisor/assessor attending the seminar. These sheets will be used as part of the assessment for Thesis Part A. You are also required to keep a record of the seminars attended on a "Seminar Attendance Form". All forms will be available in the seminar rooms.

The Seminar Assessment Sheet shows the areas of the presentation considered important.

### **Written report**

A written report about 3000 words is also required. This is to be submitted in **week 12 (Tuesday 1pm)**, by uploading the report as one single pdf formatted file. This file should include, as the first page, a scanned image of the report cover sheet. The report cover sheet can be downloaded from: [http://scoff.ee.unsw.edu.au/thesis/thesisAReportCoverSheet\\_09.pdf](http://scoff.ee.unsw.edu.au/thesis/thesisAReportCoverSheet_09.pdf). To upload your report, go to the website: <http://scoff.ee.unsw.edu.au/>, click on "My EE&T Account" from the left menu bar, and then log in with your student ID and unipass

The report must be individually written even for cases where a group of students work on the same topic.

### **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 year.

## **10. 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](http://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/>