UNSW AUSTRALIA

Course Outline

Semester 1, 2015

Never Stand Still | Faculty of Engineering | School of Mechanical and Manufacturing Engineering

MMAN9002

MEngSc Project B CONTENTS

MMAN9002 PG THESIS B

COURSE OUTLINE

1. STAFF CONTACT DETAILS

All academic staff together with some senior engineers from industry act as supervisors to the students undertaking PG thesis work. Support is also provided by the workshop and laboratory staff.

Contact details of the Course Coordinator

Associate Professor Tracie Barber
School of Mechanical and Manufacturing Engineering
Electrical Engineering Room 464H
Tel (02) 9385 4081
Email t.barber@unsw.edu.au

It is recommended you email to make a specific appointment if you need to discuss any important issues, particularly if you want to discuss extensions, supervisor issues, etc. Always consult the course Moodle first in case your questions have already been answered, or in the event that others may benefit from reading what you are asking and the response.

Contact details of the Thesis Administrator

Contact Sharon Casey (mech@unsw.edu.au) directly, cc'ing Tracie, if you have issues relating to your enrolment, progress, or other administrative queries of a technical nature.

2. COURSE DETAILS

Units of credit

This is a 6 unit-of-credit (UoC) course, but there are no prescribed contact hours per week other than what you have arranged with your supervisor.

It is essential that you consult the Moodle site for the most up-to-date and detailed information relating to the thesis.

The UNSW website states "The normal workload expectations of a student are approximately 25 hours per semester for each UoC, including class contact hours, learning activities, preparation and time spent on all assessable work."

However, in this course you have no class contact hours and no assessable work other than your thesis submission.

For a standard 24 UoC in the semester, this means 600 hours, spread over an effective 15 weeks of the semester (thirteen weeks plus study week plus one effective exam

week), or 40 hours per week, for an average student aiming for a credit grade. Various factors, such as your own ability, your target grade, etc., will influence the time needed in your case.

Some students spend much more than 40 h/w, but you should aim for not less than 40 h/w on coursework for 24 UoC.

This means that you should aim to spend not less than about 10 h/w on this course, including consultation with supervisor and workshop/laboratory staff and library/internet search. However, most students spend more time on their thesis work.

Parallel teaching

There is no parallel teaching in this course.

Summary of the course

PG Thesis is usually completed in two consecutive semesters during the last academic year. This is the only course where the students have complete freedom to work on his/her chosen thesis projects from the initiation to the end – the project contains a large amount of original research and/or novel design work or analysis. It is not the responsibility of the supervisor to tell the student what to do, nor should it be assumed that the supervisor is an expert in all areas of engineering. They are there to offer guidance and advice, as are laboratory staff, workshop staff, and others in the school that may have expertise in the area of your project. The successful execution of the project is solely the responsibility of the student.

Aims of the course

Thesis B is to be taken in the last semester required for the completion of all requirements for the award of the degree. This course, together with MMAN9001 Thesis A, taken in the previous semester, requires each student to demonstrate managerial, technical and professional skills in planning and executing an approved engineering project within a stipulated time limit. Each student is guided by a supervisor, but successfully planning, executing and reporting on the project are the sole responsibility of each student. Thesis B requires the submission of a thesis document, and is dependent on successful completion of MMAN9001.

Laboratory Staff

The laboratories are the responsibility of the staff-in-charge and you must operate within the accepted practices of the laboratory concerned. You should not expect laboratory staff to take responsibility for your thesis or carry out work for you. The laboratory staff are highly skilled and helpful; take full advantage of their experience.

If your project involves laboratory work, contact the officer-in-charge (OIC) of the laboratory in which you will be working as soon as possible to discuss your requirements. They will issue you with a Laboratory Access Approval (LAA) form which you must complete and return to the OIC.

Before you start work in a laboratory or undertake any activity which might be considered hazardous in any way, you must read and understand the practices and procedures described in the OHS section of the School's website.

Workshop

All student activities requiring manufacture in the Workshop should be discussed with the Workshop personnel at the inception of the work. The Workshop personnel must have the opportunity to advise and influence the design to help minimise assembly, manufacture or functional problems.

The Workshop is usually in high demand. If you require the Workshop to manufacture equipment essential to your thesis, then make sure that you discuss your requirements as early as possible with the Workshop/Laboratory Manager. You should provide engineering drawings which are first approved by the laboratory officer-in-charge. You should make every effort to minimise the Workshop load by modifying existing equipment rather than building from new, and by keeping your designs simple.

Safety Training

A full list of safety training requirements for PG Thesis students is available on the School's website. Safety in any project is paramount and it is mandatory to complete risk paperwork for all activities. Always discuss with your supervisor what your plans are and what risk assessments will be required.

Student Learning Outcomes

- You will be able to plan a major engineering project and see it to completion.
- You will learn how to collect and synthesise relevant information for the project.
- Learn project-specific skills such as how to design novel hardware and/or software to be used in the project.
- You will learn to communicate with others involved in the project, including professional-level discussions with your supervisor, workshop staff, and others helping you.
- You'll be able to produce a detailed, professional-standard technical document describing your work and outcomes and the "why" as much as the "what".

Graduate attributes

UNSW's graduate attributes are shown at
https://my.unsw.edu.au/student/atoz/GraduateAttributes.html

UNSW aspires to develop graduates who are rigorous scholars, capable of leadership and professional practice in a global community. The university has, thus, articulated the following Graduate Attributes as desired learning outcomes for ALL UNSW students.

UNSW graduates will be

1. Scholars who are:
   - (a) understanding of their discipline in its interdisciplinary context ✓
   - (b) capable of independent and collaborative enquiry ✓

(c) rigorous in their analysis, critique, and reflection ✓
(d) able to apply their knowledge and skills to solving problems ✓
(e) ethical practitioners
(f) capable of effective communication ✓
(g) information literate ✓
(h) digitally literate ✓

2. Leaders who are:
(a) enterprising, innovative and creative
(b) capable of initiating as well as embracing change
(c) collaborative team workers

3. Professionals who are:
(a) capable of independent, self-directed practice ✓
(b) capable of lifelong learning
(c) capable of operating within an agreed Code of Practice

4. Global Citizens who are:
(a) capable of applying their discipline in local, national and international contexts ✓
(b) culturally aware and capable of respecting diversity and acting in socially just/responsible ways
(c) capable of environmental responsibility

✓ = Developed in this course

In this course, you will be encouraged to develop Graduate Attributes 1(a), 1(b), 1(c), 1(d), 1(f), 1(g), 1(h), 3(a), and 4(a) by undertaking the selected activities and knowledge content. These attributes will be assessed within the prescribed assessment tasks, as shown in Section 5.

You will be supported in developing the above attributes through:
(i) the design of academic programs;
(ii) course planning and documentation;
(iii) learning and teaching strategies; and
(iv) assessment strategies.

Thesis Submission

The quality of the presented work is very important and great care must be taken with the typing and presentation of graphs and diagrams; drawings should be to standard engineering practice. Drawings submitted to the Workshop must be approved by the officer-in-charge of the relevant laboratory. The English should be clear and grammatically correct with a high standard of spelling and punctuation.

There is no strict minimum length for a thesis, nor is there a maximum length. We impose a soft limit of 100 pages and strongly recommend you aim for this. Appendices must be brief and should contain only material which is indispensable but at the same time cannot be included in the text.

CONFIDENTIAL THESES

If your thesis contains confidential information, in order to restrict it from viewing for two years you must complete a Confidentiality Form, available from the Moodle Site, and submit this statement with your thesis. Confidential theses should not be uploaded to the database but should be submitted in all other required formats. Discuss submission with the Thesis Coordinator.

PRODUCTION AND SUBMISSION SPECIFICATIONS

All PG thesis students are required to submit copies of their thesis in the formats shown below. Students who do not submit as required will be denied graduation until the requirements have been met.

A. Two spiral-bound copies

This copy will be returned to the author. The spine should be labelled with the author's initials and family name (a label is sufficient). Students may collect a copy from their supervisor after the results have been released. Copies not collected by the end of Week 1 in the following semester may be destroyed.

Your submission on Moodle indicates that the thesis is entirely your own original work, which is a binding statement.

B. One PDF copy through Moodle

You MUST submit a PDF copy through the Thesis B Moodle page. Name this file 'z1234567_Thesis', with '1234567' being your student ID number.

The submitted file should be less than 20mb – if you feel that your work would benefit from a larger, higher-res version, please submit this directly to your supervisor. The electronic version must have the copyright declaration included in it, as a scanned version of the signed original, though by your submission you will also agree that the work is all your own.

C. Data

Your thesis mark will not be released until you have organised to pass on your thesis data to your supervisor. This can be dropbox, USB stick, hard drive – discuss with your supervisor. However it is now a legal requirement of research conducted at UNSW that the original data be archived, and so you must collate all the work that went into your thesis (drawings, excel files, CAD files, CFD/FEA result files, etc. – everything that went into creating your thesis, but not early work or dead-ends that did not make the cut). Your supervisor will mark this task complete on Moodle.

D. One PDF copy uploaded to the School's online database

After approval, the Adobe PDF copy will be made available online to UNSW staff and students through the School's Thesis Database. The file you upload should have the same filename as that on your disc, i.e. z1234567_Thesis. Make sure the file is not password protected.

Instructions for how to upload the theses to the database will be provided through the Thesis B Moodle site.

E. A “Laboratory Cleanup Certificate”
Your thesis mark will not be released until you have cleaned up your workspace to the satisfaction of the laboratory officer in charge, and returned all borrowed/extraneous materials to that lab OIC and your supervisor if appropriate (including borrowed books, equipment, old theses, etc.). Your supervisor and the lab OIC will be required to mark this activity as complete in Moodle. It is your responsibility to satisfy the requirements of the lab OIC. If you did not use physical laboratory space, your supervisor will still note this in Moodle to mark this activity as complete.

Specifications for Thesis

Paper must be ISO size A4 (210 x 297mm).

Typing must be 1.5 to double-spaced and may be double sided only if the paper is of sufficient quality that the other side is not showing through and interfering with the readability of the text. All text should be size 11 or 12 font Times New Roman or close equivalent serif font, apart from titles and figures.

Margins must be not less than 30 mm at the left and right edge (before binding), 30 mm at the upper edge, and 20 mm at the lower edge.

The thesis must include a title sheet headed:

UNSW AUSTRALIA
SCHOOL OF MECHANICAL AND MANUFACTURING ENGINEERING
(The above are not to be abbreviated. Do not insert the UNSW crest — this is not an official UNSW publication, and so is not entitled to use the crest.)
Title of Thesis
Name of Author
Student ID
Master of Engineering Science
Date of submission (Month and Year)
Supervisor’s name

All sheets must be numbered. The main body of the thesis must be numbered consecutively from beginning to end in Arabic numerals. The preliminary pages (Abstract, List of Contents, List of Figures, List of Symbols) should be numbered using lower-case Roman numerals, commencing with the title page (but not shown on the title page). Pages in appendices may be numbered consecutively from the main text, or may have their own numbering system.

Graphs, diagrams and photographs should be inserted as close as possible to their first reference in the document. Graphs and tables which are printed in landscape format should be readable from the right hand side of the book.

Computer programs and prints of engineering drawings may be bound into the thesis in such a way that they unfold easily for reference, or they may be enclosed in a pocket at the rear of the thesis, in which case an itemised list of the contents of the pocket should also be bound into the thesis. Each loose item must be identified by the name of the

author, the degree for which the thesis is submitted, and the year in which the thesis is submitted.

All quoted sources must be clearly referenced either at the end of the thesis with a key or on the page quoted.

3. RATIONALE FOR INCLUSION OF CONTENT AND TEACHING APPROACH

How the course relates to other course offerings and overall program(s) in the discipline

PG Thesis work is unique in the sense that it relates to what has been learnt in the entire degree program. The School also encourages projects from industry, in which case one person from the industry acts as a co-supervisor.

Learning and teaching philosophy underpinning the course (drawing on the UNSW Guidelines on Learning that Inform Teaching at UNSW where appropriate)

Effective learning is supported when you are actively engaged in the learning process and by a climate of enquiry, and these are both achieved by regularly meeting your supervisor and other staff members. Activities that are interesting and challenging, but which also create opportunities for you to have fun, can enhance the learning experience.

You become more engaged in the learning process if you can see the relevance of your studies to professional, disciplinary and/or personal contexts, and the relevance is found in all parts of thesis work.

4. TEACHING STRATEGIES

The teaching strategies used in the course and the ways they support student learning outcomes

There is no formal teaching but the students learn from both internal and external sources. The supervisor, other academics and laboratory/workshop staff are the internal sources, whereas the Library, internet and industry mentors are the external sources.

5. ASSESSMENT

It is your responsibility to keep your project details (supervision, title, working abstract) up to date in the “your project details” section of Moodle. If you do not have information in here or the supervisor name is incorrect, your thesis will not get assigned for marking.

Thesis hard copies and electronic copies due Monday week 13, 4pm.

Please submit your 2 hard copies in person to the General Office, and your PDF copy through the Moodle Thesis B submission portal.

The thesis is marked by two independent examiners, usually the supervisor as an assessor and a second marker who may not be familiar with the work and can therefore assess in a more independent, objective fashion. In case of disagreement between the assessor and the moderator, a third examiner may be nominated.

There are three broad aspects of the thesis which are taken into account when assessing its quality:

Organisation – how well you organised the project.
Quality – the quality of the content of the thesis.
Presentation – how well you present the material.

The full marking scheme given to assessors is available to students through the Moodle page.

Other tasks (which are mandatory but not marked) will be detailed on Moodle, and include keeping your project and supervision details up to date on Moodle, and obtaining a lab cleanup certificate upon completion of your work.

Deadlines are vital in all engineering activities and this is reflected in the marking system.

- Late submission, even by 1 minute, will automatically mean a deduction of 10 marks from that which would have been your original award, but you will not fail if the thesis was otherwise of sufficient standard.
- Up to 2 weeks after submission due date:
    - Deduction of marks at the fixed rate of 2 marks per day or part thereof (may include weekends), but you will not fail if the thesis was otherwise of sufficient standard.
- Beyond 2 weeks but not exceeding 6 weeks late after submission due date:
    - Grade limited to 'Pass' if the thesis was otherwise of sufficient standard.
- Beyond 6 weeks late after submission due date:
    - 'Fail' unless ‘Withheld’ is granted beforehand.

Circumstances Beyond Your Control

If you feel that a submission delay in your thesis is beyond your control, then you should contact the PG Thesis Co-ordinator in the first instance. Please discuss with your supervisor first.

The procedure is briefly outlined below.

1. Requests for consideration of circumstances should be submitted by the end of Week 9.
2. Requests should be submitted to the Thesis Coordinator using the official Thesis Extension Request form which must be sighted and signed by the supervisor.
3. Requests based on personal/medical claims may also be submitted at the same time to the UNSW system for Special Consideration on the recommendation of the Thesis Coordinator.
4. Requests will be assessed by a panel of three, and determinations reported in Week 10.

The above procedure is primarily intended for a delay of up to a maximum of two weeks.

NOTE – Extensions will not be granted for hardware failures, theft, printer malfunctions, or any other circumstances along such lines – it's your responsibility to backup regularly and protect your data. Similarly, situations which are the result of your own poor planning (i.e. didn't start early enough, didn't think it would take this long) are not going to have much luck.

Unsatisfactory Original Submission

If your thesis is submitted on time but fails to meet the required standard, the Thesis Review Meeting will either:

- grade your thesis 'FAIL', or
- grant you a 'Withheld for Re-submission'.

For 'Withheld' you will then be permitted to submit/re-submit within 12 weeks of the 'bound thesis' submission date. Any thesis that is not submitted by this last date will be graded 'FAIL' and no allowances will be made. No thesis for a student granted a 'Withheld' status will be eligible for a grade higher than 'PASS'.

6. ACADEMIC HONESTY AND PLAGIARISM

Plagiarism is using the words or ideas of others and presenting them as your own. Plagiarism is a type of intellectual theft. It can take many forms, from deliberate cheating to accidentally copying from a source without acknowledgement. UNSW has produced a booklet which provides essential information for avoiding plagiarism: https://my.unsw.edu.au/student/academiclife/Plagiarism.pdf

There are a range of resources to support students to avoid plagiarism. The Learning Centre assists students with understanding academic integrity and how not to plagiarise. They also hold workshops and can help students one-on-one. Information is available on the dedicated website Plagiarism and Academic Integrity website: http://www.lc.unsw.edu.au/plagiarism/index.html

You 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 tasks. If plagiarism is found in your work when you are in first year, your lecturer will offer you assistance to improve your academic skills. They may ask you to look at some online resources, attend the Learning Centre, or sometimes resubmit your work with the problem fixed. However more serious instances in first year, such as stealing another student's work or paying someone to do your work, may be investigated under the Student Misconduct Procedures.

Repeated plagiarism (even in first year), plagiarism after first year, or serious instances, may also be investigated under the Student Misconduct Procedures. The penalties under the procedures can include a reduction in marks, failing a course or for the most serious matters (like plagiarism in a thesis) even suspension from the university. The Student Misconduct Procedures are available here:

http://www.gs.unsw.edu.au/policy/documents/studentmisconductprocedures.pdf

Further information on School policy and procedures in the event of plagiarism is presented in a School handout, Administrative Matters for All Courses, available on the School website.

7. COURSE SCHEDULE

There is no prescribed schedule. The day-to-day activities are based on guidance from the supervisor. The student must be in regular contact with the supervisor (weekly is recommended), and anything less than once a month in person is likely to concern the supervisor and may affect your progress. Frequent email updates are preferred by some supervisors – it is up to you to reach an agreement that works for both parties.

8. RESOURCES FOR STUDENTS

Textbook details, including title, publisher, edition, year of publication and availability (in bookshop, UNSW library, MyCourse)

No prescribed textbook.

Content on the Moodle page will be updated often with tips and discussions and resources, so you are strongly advised to make sure you are able to receive updates.

9. COURSE EVALUATION AND DEVELOPMENT

We are continuing to implement some significant overhauls to thesis marking, topic allocations, content delivery (i.e. greater use of Moodle), and the raising of standards required of student work to obtain distinctions and high distinctions. The faculty is also moving to standardise Thesis to an extent across all schools. All discussion and changes are based on staff and student feedback, and we always welcome this – a section on the Moodle site will be set up to discuss student-focused, student-generated ideas in particular.

10. ADMINISTRATIVE MATTERS

You are expected to have read and be familiar with "Administrative Matters for All Courses", available on the School website. This document contains important information on student responsibilities and support, including special consideration, assessment, health and safety, and student equity and diversity.

Associate Professor Tracie Barber, Course Convener
February 2015