



GMAT4010 Undergraduate Project Thesis A

Semester 1, 2016

Never Stand Still

Faculty of Engineering

School of Civil and Environmental Engineering

COURSE DETAILS

Units of Credit	6		
Contact hours	<1 hours per week		
Class	Wednesday, 16:00 – 17:00	BUS232	
Course Coordinator	Chris Rizos email: c.rizos@unsw.edu.au office: 93854205 phone		

INFORMATION ABOUT THE COURSE

This fourth year undergraduate 6UOC course in the SAGE undergraduate programs is unlike any attempted by a student up to this point. The aim of the course (together with the Thesis B course GMAT4015) is to provide the student with an opportunity to carry out a substantial project-type or research-type study program on a topic they select, under the direct supervision of a SAGE staff member. The primary objective of GMAT4010 is to carry out the appropriate background literature review and preliminary research for **Thesis Part A**, which will link with the Thesis Part B, which will be undertaken in Session 2, in GMAT4015. *GMAT4010 is therefore a prerequisite for GMAT4015.*

HANDBOOK DESCRIPTION

<http://www.handbook.unsw.edu.au/undergraduate/courses/2016/GMAT4010.html>

OBJECTIVES

Students are expected to demonstrate managerial, technical and scientific, and professional skills in researching, planning, executing and analysing an approved research or engineering project and to comprehensively report on the work orally and in writing, all within a stipulated time limit. Since the thesis topics are typically beyond the material taught in the degree program, the students have to show further that they are able to acquire, on their own, the additional knowledge and skills required for the successful completion of the work related to their thesis. GMAT4010 offers the opportunity to undertake the background research for their selected topic, and to prepare a Thesis or Research Proposal that forms the basis for the work to be undertaken in GMAT4015. This course therefore provides an opportunity for the students to acquire the following attributes:

- The skills involved in scholarly enquiry
- An in-depth engagement with the relevant disciplinary knowledge in its inter-disciplinary context
- Capacity for analytical and critical thinking and for creative problem solving
- Ability to engage independent and reflective learning
- Information literacy
- Skills for effective communication

TEACHING STRATEGIES

The Course Coordinator will guide the students in the selection of their thesis/project topics, and will discuss with them such issues as: review of literature, the nature of research (or other activities), scheduling of work and time management, report preparation, preparation of the Thesis Proposal and a short oral presentation.

During the last summer break several topics were proposed by students themselves, or the students have developed topic ideas with the assistance of staff. These students can be assumed to have already commenced GMAT4010 and may start consultations with their Supervisor(s).

In the case of those students who have not already “locked in” a project with a staff member, they will be issued with a list of available thesis topics. (They may also propose their own topics, but a suitable Supervisor must also be found.) Students submit their selection (agreed to by a Staff member) or their own topic idea to the Course Coordinator by the end of Weeks 2 or 3. The topic allocations will be announced by email immediately after. It is vital that students have their project idea finalised as early as possible. Should more than one student select a topic then, typically, preference will be given to the student that obtained better results in Year 1-3 courses that are relevant for that particular topic. However, special talents, interests and knowledge will also be considered. However the final decision will rest with the Supervisor.

The student is then expected to meet regularly with their thesis Supervisor to discuss details of the selected project, and to develop the project plan that can be presented to the class, and which eventually leads to the submitted Thesis Proposal.

The Course Coordinator will mentor the students, guiding them as they come to grips with the expectations of the research or engineering project. However, the most important aspect of the students’ learning will be influenced by their one-on-one relationship with their Supervisor. (He or she will either be a staff member, possibly supported by a person from industry with an interest in the topic.) The Supervisor (there can be more than one) will guide the student in defining the project objectives and the work program, e.g. identifying the essential tasks and the resources or facilities, advising them where they may find background literature, and ensuring the thesis task is feasible within the time frame (and other constraints) that apply.

Since the thesis is likely to include aspects that are new to the student, it is vital that student and Supervisor meet, on average, at least the equivalent of one hour per fortnight. It is suggested that each Supervisor arranges a fixed weekly time for meetings with each thesis student, either individually or as a group (if appropriate). As a minimum, at each meeting, students should report progress of their thesis work over the preceding weeks and compare the actual with the planned progress. The work plan should be adjusted, if necessary. Students must keep a log of the meetings, using the Log Form provided. The log should be signed by the Supervisor each time a meeting is held.

EXPECTED LEARNING OUTCOMES

By the end of this course the student should be able to:

- (a) Demonstrate the managerial, technical and professional skills in researching and planning an approved research or thesis project.
- (b) Report, in writing and orally, the outcomes of their research and planning tasks.
- (c) Appreciate and demonstrate the acquisition of new knowledge and skills, as required for their selected research or thesis project.

ASSESSMENT

Assessment for the course includes:

- Presentation: 20%
- Supervisor’s Assessment: 15%
- Thesis Part A Report: 65%

Presentation

Each student is required to present on their Thesis Part A work in Week 11/12. The presentation covers the following (just indicative):

- Outline of the literature research done, or will be done (to be completed by the time the Thesis Part A report is submitted in Week 13).

- Definition of the scope of the project, the background, and reflection on what it means to the student.

Note that this is the first “hurdle” of the course. If your Supervisor and the Course Coordinator feel that you have not made a serious effort to meet regularly, or to have progressed the project, or to have invested the expected time in the background research, *and therefore to have not made satisfactory progress* - as indicated by a sub-standard Presentation (worth 20% of the total GMAT4010 grade) and/or negative Supervisor review (worth 15% of the total GMAT4010 grade) – then enrolment of the student in this course may be terminated.

Thesis Part A Report

The Thesis Part A Report is to be submitted Friday 3 June (end Week 13) by email to me (c.rizos@unsw.edu.au) as well as a hardcopy. The proposal must be presented to the same standard (in terms of layout, presentation, binding, English expression) as the final thesis. This Thesis Part A Report should reflect the result of a minimum of 50 hours of work. The Thesis Part A Report will be a report of no more than 40 pages, across all sections listed below. The Proposal should demonstrate that the student is clear about the meaning of the topic, has searched, found and read the reference literature, has analysed the steps required to progress to a successful completion of the task, has worked out how the different parts of the task should be approached (i.e. experimental design), has prepared a draft table of contents of the Thesis Part B and has designed a feasible schedule that allows completion by Friday W13, Session 2. The contents/layout should include:

- **Definition of the thesis topic and statement of aims of the thesis**
 - **Introduction** to the topic of the thesis. This includes a search for and review of the literature on the subject (background reading) identifying key works on which your thesis will be based. Summarise what these references have to say about your topic and pinpoint differences of opinion and approaches. Literature that is referenced in the Report is listed under "References". Literature that has been reviewed and is relevant in a general sense but is not directly referenced in the proposal is listed under "Bibliography". In short, you have to find out what others have published on your thesis topic, and how that relates and is useful for your task. Also include the basic considerations that have to be considered for your topic.
 - **Preliminary activities.** Not all research/investigations will be undertaken in GMAT4015. Several discrete activities (e.g. tests, evaluations, software development, etc) should have been undertaken, and it is necessary to report these in the Thesis Part A Report.
 - **Proposed activities** (W13/S1 to W13/S2, in chronological and logical sequence): library searches, background reading, experiments, measurements, equipment or materials to be used, experimental design, etc.
 - **A week-by-week timetable** for these activities, starting in W13/S1 through to W13/S2. Make separate columns for experimental work and for the writing of the thesis report. Clearly identify deadlines by which certain activities must have been completed.
- Note: Students with theses that require extensive and uninterrupted laboratory, field or other research periods might find it beneficial to plan some work in the mid-year break. Note, however, that some staff are busy with, and some equipment is used in, Survey Camps.*
- **Proposed table of contents** of the final thesis (as detailed as possible, as it applies to your topic, particularly as far as the body of the report is concerned).
 - **References & Bibliography**

Assessment Conditions:

An assessment will be made by the Course Coordinator of the adequacy of the Thesis Part A work before it is handed to the student's Supervisor for assessment. If the proposal is deficient, the student will be asked to resubmit. If it again fails to meet the standard expected, a failure is awarded in GMAT4010 and the student will discontinue the course, and hence will be unable to enrol in the GMAT4015 course in Session 2.

If the Thesis Part A Report is judged adequate by the Course Coordinator, it will be passed-on to the Supervisor for assessment. The mark for the Report will be based on the completeness, the quality of the different sections, the presentation and, in particular, the depth, completeness and understanding shown in the main chapter 'Introduction'. Upon grading by the Supervisor, the Course Coordinator will also assess the Report. The composite mark in GMAT4010 will then be based on the Thesis Part A Report (65%), the Presentation(20%), and the Supervisor's

Review (15%), although the Course Coordinator may vary these proportions, or otherwise change the assessments.

COURSE PROGRAM

SEMESTER 1, 2016

Week	Date	Topic	Assessments Due
1	29/2	Course outline, Purpose of Thesis Part A, Topics, Assessment, etc	
2	7/3	NO CLASS	
3	14/3	Planning the thesis tasks, Meet with Supervisors, Finalise topic selection	
4	21/3	NO CLASS	
Break			
5	4/4	NO CLASS	
6	11/4	Progress reports, Discussion, Guidelines for preparation of Thesis Part A report	
7	18/4	NO CLASS	
8	25/4	Progress reports, Discussion, Guidelines for preparation of Thesis Part A report	
9	2/5	NO CLASS	
10	9/5	NO CLASS	
11	16/5	Presentations	<i>Presentation grade</i>
12	23/5	Presentations	<i>Presentation grade</i>
13	30/5	NO CLASS	<i>Submit Thesis Part A report (Friday 3 June)</i>

RELEVANT RESOURCES

There is no text book for this course. The following general reference books may assist the student:

Anderson, J. and M. Poole (1994). *Thesis and Assignment Writing*. 2nd ed. Jacaranda Wiley, Brisbane.

Day, R. A. (1989). *How to Write & Publish a Scientific Paper*. 3rd ed., Cambridge University Press, Cambridge.

Hicks, C.R. and K.V. Turner (1999). *Fundamental Concepts in the Design of Experiments*. 5th ed. Oxford University Press.

Howard, K. and J. A. Sharp (1983). *The Management of a Student Research Project*. Gower Publishing Company Ltd., Aldershot, U.K.

Montgomery, D.C. (1991). *Design and Analysis of Experiments*. 3rd ed. John Wiley & Sons, New York.

Pitson, J. (rev.) (1978). *Style Manual for Authors, Editors and Printers of Australian Government Publications*. 3rd ed. Australian Government Publishing Service, Canberra.

Reynolds, L. and D. Simmons (1982). *Presentation of Data in Science*. 2nd print. Martinus Nijhoff Publishers, The Hague.

Past Thesis Reports are available from your Supervisor.

DATES TO NOTE

Refer to MyUNSW for Important Dates available at: <https://student.unsw.edu.au/dates>

PLAGIARISM

Beware! An assignment that includes plagiarised material will receive a Fail grade, and students who plagiarise may fail the course. Students who plagiarise are also liable to disciplinary action, including exclusion from enrolment.

Plagiarism is the use of another person's work or ideas as if they were your own. When it is necessary or desirable to use other people's material you should adequately acknowledge whose words or ideas they are and where you found them (giving the complete reference details, including page number(s)). UNSW provides further information on what constitutes Plagiarism at:

<https://student.unsw.edu.au/plagiarism>

ACADEMIC ADVICE

Refer to Academic Advice on the School website:

<http://www.engineering.unsw.edu.au/civil-engineering/resources/academic-advice>

Access to Equipment & Laboratories

Most of the equipment and laboratories at the School of Civil & Environmental Engineering can be made available to thesis students. However, all arrangements have to be made by the Supervisor with the respective laboratory managers.

Thesis students have access to the equipment held in the SAGE Survey Store, if the required equipment is not scheduled for class work or survey camps. Again, the Supervisor should advise the Storeman of the requirements and options, and should nominate the students that have to have access to specific items. The student can then book the equipment for specific times through the appropriate booking form.

For some projects equipment, datasets or software will be provided on loan by an outside organisation. There will be different arrangements for such situations. For example, the equipment may be used on campus for a restricted period of time. Or the gear can only be used on the organisation's premises. We encourage students and supervisors to work with industry and government agencies, however care must be taken to ensure that no damage is done. Consult closely with your Supervisor in all such cases. Consult your Supervisor about after hours access to labs, etc.

Criteria for Progression to GMAT4015

The following criteria must ALL be satisfied if the student is to be given a grade in GMAT4010 and permitted to progress to GMAT4015:

- **Presentation:** The Supervisor and Course Coordinator will discuss your progress and make a decision whether to permit continuation in this course.
- **Industrial Training:** All engineering students are required to complete 60 days of Industrial Training.
- **Thesis Part A Report:** The Report must be judged satisfactory by both the Supervisor and Course Coordinator.

Expected Workload

At UNSW, the normal workload expectations of a student are 25-30 hours per session for each Unit Of Credit (UOC), including class contact hours, preparation and time spent on all assessable work. Hence 150-180 hours in total.

Academic Rules

Students should read the University Calendar (<http://www.handbook.unsw.edu.au/general/2016/SSAPO/GeneralRules.html>) for University Rules and special considerations. Students should attend all classes, as well as regularly meet with their Supervisor. Students are reminded that the University regards academic misconduct as a very serious matter. Beware! An assignment that includes plagiarised material will receive a 0% Fail, and students who plagiarise may fail the course. Students who plagiarise are also liable to disciplinary action, including exclusion from enrolment.

Plagiarism is the use of another person's work or ideas as if they were your own. When it is necessary or desirable to use other people's material you should adequately acknowledge whose words or ideas they are and where you found

them (giving the complete reference details, including page number(s)). The Learning Centre provides further information on what constitutes Plagiarism at: <https://student.unsw.edu.au/plagiarism>

All assignments are compulsory parts of the course and must be handed in by the due date. A mark of zero will be given for any submission which violates this rule. (The Course Coordinator has the discretion to vary this penalty, depending upon circumstances.) If a student is unable to submit on time due to illness or other legitimate reason, then a brief written explanation must be given to the Course Coordinator (or sent as an email) for consideration as soon as is feasible. In some cases the Coordinator may grant an extension to the submission date provided he has been contacted before the due date and the thesis supervisor approves.

Grievances

In the first instance all grievances should be discussed with the Course Coordinator. The student is expected to meet regularly with his/her Supervisor. As this is a critical factor in the education process, if there are any problems in the student-supervisor relationship these must be drawn to the Coordinator's attention as soon as possible. The Coordinator may assign a new Supervisor.

Health & Safety

All students who plan to work either in the School Laboratories unsupervised (CVEN structures or water labs, or Randwick campus SAGE lab) or conduct any outdoors experiments/fieldwork need to complete the CVEN laboratory induction process before accessing the labs. (This does not apply to anyone intending to work only in Computer Labs.) If unsure, then consult your supervisor. Information on HS issues within CVEN can be obtained from webpage: <http://intranet.civeng.unsw.edu.au/info-about/health-safety>

If you are in this student category, there are three parts:

1. Complete 'Laboratory Safety Awareness Training for Students.' (on-line training).

You can book online through the HS Unit website http://www.ohs.unsw.edu.au/hs_training/index.html

2. Complete Environmental Compliance (Green Lab) Training. This is a short online course and you register by emailing Gautam Chattopadhyay your student number with a request for registration for Green Lab training.(gautam@unsw.edu.au)

3a. Complete a local induction (RIPA Folder) with the laboratory manager if you will be working in a School Laboratory; or

3b. Fill out the relevant forms (see below) if you will be working outdoors (on campus or off it), by checking the HS webpage: http://www.ohs.unsw.edu.au/hs_hazards/fieldwork.html

Other Matters

For information about:

- Notes on assessments and plagiarism,
- School policy on Supplementary exams,
- Special Considerations,
- Solutions to Problems,
- Year Managers and Grievance Officer of Teaching and Learning Committee, and
- CEVSOC & SURVSOC

Refer to Academic Advice on the School website available at:

<http://www.engineering.unsw.edu.au/civil-engineering/resources/academic-advice>