GMAT4150 Field Projects 2 - 2024

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General Course Information

Course Code : GMAT4150
Year : 2024
Term : Term 3
Teaching Period : T3
Is a multi-term course? : No
Faculty : Faculty of Engineering
Academic Unit : School of Civil and Environmental Engineering
Delivery Mode : In Person
Delivery Format : Standard
Delivery Location : Kensington
Campus : Sydney
Study Level : Undergraduate
Units of Credit : 6

Useful Links

Handbook Class Timetable

Course Details & Outcomes

Course Description

Projects will involve small groups of students working as a team to complete the design and execution of selected tasks in Surveying and Geospatial Engineering. Topics may be cadastral surveys, remote sensing analysis of the environment from satellite images, digital photogrammetric mapping tasks, setting up a precise geodetic control network, the use of

precise GNSS techniques, collection of data for and design of a GIS system, a precise engineering survey or the development and analysis of a geospatial database of a region. Students will usually be required to attend a one week off campus field work (survey camp) or regular day trips to an off campus field site and present the results of their group project in a well written technical report and individual presentations to the group.

Course Aims

The objectives of the course are to broaden and deepen your knowledge and experience of surveying and geospatial data acquisition, surveying instrumentation and modern mobile mapping systems, field methods, and surveying and mapping software, by conducting your own survey and mapping activities at a site remote from the UNSW campus or on it. The aim is to involve you in management aspects of field survey and mapping tasks as well as gaining more experience in measurement, fieldwork design, and analysis, and to give you confidence in your ability to do survey and mapping of a type that you may not have done before at University or in employment.

Relationship to Other Courses

This course builds on previous courses in years 1, 2 and 3. You should have already passed or been exempt from those courses. If you have not passed any of the year 1, 2 or 3 GMAT courses then you should contact the course convenor for advice and permission to enrol in this course.

This course changes considerably each year with new projects to challenge and educate students. The project for T3, 2024 is described below.

Prerequisite: GMAT3150

Course Learning Outcomes

Course Learning Outcomes
CLO1 : Apply surveying/geospatial knowledge learnt so far in the program to design surveys using a range of equipment to solve challenging problems.
CLO2 : Manage a team to solve problems, meet deadlines with appropriate outcomes and communicate these results in report form and/or via a presentation to "clients"
CLO3 : Analyse and assess data and produce suitable geospatial products that are client ready.
CLO4 : Provide a thorough and critical self-assessment of individual performance and provide this to supervisors

Course Learning Outcomes	Assessment Item
CLO1 : Apply surveying/geospatial knowledge learnt so far in the program to design surveys using a range of equipment to solve challenging problems.	• Project Team (Group) Report • Final (Individual) Report and presentation
CLO2 : Manage a team to solve problems, meet deadlines with appropriate outcomes and communicate these results in report form and/or via a presentation to "clients"	• Project Team (Group) Report • Final (Individual) Report and presentation
CLO3 : Analyse and assess data and produce suitable geospatial products that are client ready.	• Project Team (Group) Report • Final (Individual) Report and presentation
CLO4 : Provide a thorough and critical self-assessment of individual performance and provide this to supervisors	• Individual Self-Assessment

Learning and Teaching Technologies

Moodle - Learning Management System | Blackboard Collaborate

Learning and Teaching in this course

Attendance in week 1 is compulsory.

During the week 1 class, the course coordinator will explain the functionality of course. This is a capstone course. The lecturer will act as a client and students will direct the course (with guidance). In the first week the class must elect a Managing Director, a Chair of their weekly meetings and a secretary. These are key people to communicate with the lecturer. Minutes and action items will be taken at these 1pm weekly meetings.

The Lecturer will facilitate the allocation of research topics for the first 3 weeks.

The timetabled class is Tuesday 1pm and F2F. The 4-hour timeslot is intended so that you can do fieldwork and or lab work for this project on some days (not necessarily every week) without interruptions from other classes. Most classes will commence with a meeting, addressing previous action items and communicating to the whole group and the lecturer progress and problems to ensure a satisfactory outcome. The meetings should not take longer than 1 hr, but sometimes detailed discussions are required. The rest of the session will be devoted to lab work with devices, field work, calculations, report writing etc. Descriptions of the project, site photos, maps, WH&S forms, etc., will be discussed at the meetings.

The field surveys will be conducted as group work. Students within a group do not necessarily all do the same tasks. For example, one student might take on management duties and organise logistics while other students concentrate on design, pre-fieldwork calculations and preparations, etc. It is up to the groups to ensure all students contribute appropriately. The Managing Director coordinates this and liaises with the course coordinator who may assign different marks to individual students, at their discretion, based on student activity in the field and/or in the lab.

Assessments

Assessment Structure

Assessment Item	Weight	Relevant Dates
Project Team (Group) Report Assessment Format: Group	30%	Start Date: Not Applicable Due Date: 04/10/2024 04:00 PM
Final (Individual) Report and presentation Assessment Format: Individual	60%	Start Date: Not Applicable Due Date: 22/11/2024 04:00 PM
Individual Self-Assessment Assessment Format: Individual	10%	Start Date: Not Applicable Due Date: 19/11/2024 04:00pm

Assessment Details
Project Team (Group) Report

Assessment Overview

The project team report will be assessed based on the following criteria:

Review of relevant literature and existing data

Pre-planning, calculations and training sessions

Report on tasks completed by this due date

Planning of activities for remainder of this term, including field work logistics

Quality of written presentation, on time, plagiarism statement

A marking rubric will be provided. Marks will be returned within 1 week.

Course Learning Outcomes

- CLO1 : Apply surveying/geospatial knowledge learnt so far in the program to design surveys using a range of equipment to solve challenging problems.
- CLO2 : Manage a team to solve problems, meet deadlines with appropriate outcomes and communicate these results in report form and/or via a presentation to "clients"
- CLO3 : Analyse and assess data and produce suitable geospatial products that are client ready.

Detailed Assessment Description

Details will be given on Moodle

Assignment submission Turnitin type

Not Applicable

Generative AI Permission Level

Simple Editing Assistance

In completing this assessment, you are permitted to use standard editing and referencing functions in the software you use to complete your assessment. These functions are described below. You must not use any functions that generate or paraphrase passages of text or other media, whether based on your own work or not.
If your Convenor has concerns that your submission contains passages of AI-generated text or media, you may be asked to account for your work. If you are unable to satisfactorily demonstrate your understanding of your submission you may be referred to UNSW Conduct & Integrity Office for investigation for academic misconduct and possible penalties.
For more information on Generative AI and permitted use please see here.

AI can assist with writers' block but must always be editted and carefully checked. It should help, but not replace your work.

Final (Individual) Report and presentation

Assessment Overview

The report is a detailed individual investigation on the project including a literature review and fieldwork, where the submission is 20-30 pages in length. It also involves a 10-20 minute presentation. Marks will be returned at the end of term.

Course Learning Outcomes

- CLO1 : Apply surveying/geospatial knowledge learnt so far in the program to design surveys using a range of equipment to solve challenging problems.
- CLO2 : Manage a team to solve problems, meet deadlines with appropriate outcomes and communicate these results in report form and/or via a presentation to "clients"
- CLO3 : Analyse and assess data and produce suitable geospatial products that are client ready.

Detailed Assessment Description

Details on Moodle

Assignment submission Turnitin type

Not Applicable

Generative AI Permission Level

Simple Editing Assistance

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For more information on Generative AI and permitted use please see here.

AI can assist with writers' block but must always be editted and carefully checked. It should help, but not replace your work.

Individual Self-Assessment

Assessment Overview

Self-assessment is an opportunity for students to critically review their own performance and is 2-3 pages in length. Marks will be returned at the end of term.

Course Learning Outcomes

- CLO4 : Provide a thorough and critical self-assessment of individual performance and provide this to supervisors

Detailed Assessment Description

Detailed description of this task will be given on the moodle site.

Assignment submission Turnitin type

Not Applicable

Generative AI Permission Level

Not Applicable

Generative AI is not considered to be of assistance to you in completing this assessment. If you do use generative AI in completing this assessment, you should attribute its use.

For more information on Generative AI and permitted use please see [here](#).

General Assessment Information

Each student should include a time sheet indicating the time spent on this course – in much the same way as a business would use to charge a client for work on a project. It should include travel and meeting time. Students should not spend more than 150 hours on the course. However, students should not 'waste' time doing idle activities merely to accumulate time for the project. Students will be required to submit a formal documented self-assessment on their participation in this course. Students who spend too few hours on this course have probably not contributed significantly; that affects their own learning and the group's output. The main reason for including time sheets in the course is because some parts of industry report that some graduates are not experienced at recording total time spent on a project and the consequences for budgeting and quoting for future projects.

As a management exercise, the final reports should include a hypothetical costing of the "job". Students are expected to have group meetings regularly and keep minutes and action items of those meetings. Students are to prepare all necessary WH&S documentation and to submit this to their supervisor.

Feedback for all reports will be given as soon as possible after submission. Details of the Self-assessment task will be given in a separate file on the class website.

<u>Grading Basis</u>

Standard

<u>Requirements to pass course</u>

Participation, enquiry, hard work, having a crack, failing, trying again, learning, asking, collaborating, volunteering knowledge, working as a team, initiative, pride, delivery.

Course Schedule

Attendance Requirements

Students are strongly encouraged to attend all classes and review lecture recordings.

General Schedule Information

Ultimately one single report with individual contributions will be submitted by the group.

Proposed tasks associated with this project

1. Students will conduct a literature review on the various forms of laser scanning.
2. Some students will investigate the aboriginal/ colonial history of Bare Island.
3. Prepare a literature review of various scanners and specifications and some suggestions of suitable instruments for this project.
4. Various technical aspects of laser scanning will be included in the report including: Registration (targets, cloud, traversing), georeferencing/ datums, data processing and deliverables, software techniques (SiFT, SLAM, SfM), calibrating laser scanners, laser scanning performance (surfaces, range, intensity etc).
5. A project plan will be developed in meetings with the group including logistics, equipment etc
6. Students will design a reporting template and all will follow it in preparation of the combined report.
7. Depending on progress, some students will compare numerous scans of the same objects and report on pros/ cons of some techniques.
8. For the final report, some will write the discussion section, some will organise appendices and references and concluding remarks. The MD will coordinate these tasks.
9. The final report should be suitable to hand to an interested third party.
10. All students will agree on a presentation schedule and individually present one aspect of the project as part of a group narrative about the whole project.
11. Perhaps one student will assist the lecturer in drafting a paper for Position Magazine or Azimuth.
12. All students will prepare a self-assessment of their work.

Proposed tasks may change depending on circumstances

Proposed week-by-week activities:

Note these week-by-week activities will likely change at the agreed discretion of the group. Students will need to familiarise themselves with the context of the project. Making devices work and talk to PCs or download data can be tricky. Sometimes outside advice is needed. The lecturer and professional officers will assist.

Week 1: Explanation of course style and overview of project. Elect MD, Chair, secretary and agreed division of responsibilities, preparation of documentation (WH & S, time sheets). Preparation for design of surveys, begin literature review on laser scanning, discuss criteria to test and think about location of test bed. Draft minutes/ action items.

Week 2: 1pm meeting. Address action items, discuss progress. Continue literature review and develop a table of contents of the various laser scanning modes and any other theoretical concepts. Develop the project plan and what exactly will be tested. Begin to learn how to use instruments if they have arrived.

Week 3: 1pm meeting at Bare Island for some reccy. Return to UNSW for 2:30pm meeting. Address action items, discuss progress. Complete literature review and any outstanding items. Formalise the project plan and refine the workflow. Test equipment if you already have some. Write up report and divide tasks equally. The report will also include the WH&S documentation, time sheets and a description of each of the tasks. Assist staff to access the various instruments.

Week 4: 1pm meeting. Address action items, discuss progress. Deadline for Group submission. Perform test laser scans and download into software. Write/ update cheat sheets for functionality.

Week 5: Meeting at Bare Island. Field work. Possibly a full day.

Week 6: Flexibility week. Possible full day of fieldwork depending on timetables. Start to process scan data.

Week 7: 1pm meeting. Address action items, discuss progress. Split group. Outstanding field work?

Week 8: Split group: Fieldwork/ processing. Meeting. Address action items, discuss progress. Compare and contrast results. What was good, what not. Divide responsibilities for preparing individual sections of report, comparison graphs, charts and tables + extra parts of the final report (to be decided by the group).

Week 9: Report writing. Allocate tasks amongst students to write toward a single report comprising individual parts. Group discussion to distil the outcomes of this project. Can we produce a deliverable?

Compile a group report detailing the literature review and motivation for the project, current state of laser scanning in Australia, pros/cons of the method uses, results, discussion, recommendations. Include WH & S documentation and time sheets.

Week 10: Project presentations to invited guests. Project group report submission. Time sheets and self-assessment to be provided at a specified date in week 11.

The reports should be in **electronic form** as a single MS Word format document that includes at least a title page, contents, summary, results, report, plans, input and output files. Spreadsheets, appropriate software output files that support your project. Name the files clearly. Field sheets (if

applicable) and any other paper documents should be scanned for submission. The report should be professionally prepared for the client and copies may be adapted for presentation to a Surveying and Spatial profession.

Although the final submission is a group report, there needs to be a breakdown of which individual student performed which task. This will be accompanied by a signed sheet from all group participants agreeing with their specific contribution to the final report and associated time sheets. An individual self-assessment report is required.

Course Resources

Prescribed Resources

Equipment

This project will try to source a range of different instruments and students will be challenged to try to operate them. Professional officers will provide great assistance for this task. Any other appropriate gear from the survey store can be used. Students wishing to collect survey equipment from the survey store will liaise with the project supervisor. There is no person permanently in the survey store so students will need to organise times of collection and return of equipment carefully.

Students will have access to CE201 and all software on the lab computers. Also CE406 and software.

Staff Details

Position	Name	Email	Location	Phone	Availability	Equitable Learning Services Contact	Primary Contact
Convenor	Craig Roberts		CE412	0293854464		Yes	Yes

Other Useful Information

Academic Information

I. Special consideration and supplementary assessment

If you have experienced an illness or misadventure beyond your control that will interfere with your assessment performance, you are eligible to apply for Special Consideration prior to, or

within 3 working days of, submitting an assessment or sitting an exam.

Please note that UNSW has a Fit to Sit rule, which means that if you sit an exam, you are declaring yourself fit enough to do so and cannot later apply for Special Consideration.

For details of applying for Special Consideration and conditions for the award of supplementary assessment, please see the information on UNSW's Special Consideration page.

II. Administrative matters and links

All students are expected to read and be familiar with UNSW guidelines and polices. In particular, students should be familiar with the following:

- Attendance
- UNSW Email Address
- Special Consideration
- Exams
- Approved Calculators
- Academic Honesty and Plagiarism
- Equitable Learning Services

III. Equity and diversity

Those students who have a disability that requires some adjustment in their teaching or learning environment are encouraged to discuss their study needs with the course convener prior to, or at the commencement of, their course, or with the Equity Officer (Disability) in the Equitable Learning Services. Issues to be discussed may include access to materials, signers or note-takers, the provision of services and additional exam and assessment arrangements. Early notification is essential to enable any necessary adjustments to be made.

IV. Professional Outcomes and Program Design

Students are able to review the relevant professional outcomes and program designs for their streams by going to the following link: https://www.unsw.edu.au/engineering/student-life/student-resources/program-design.

Note: This course outline sets out the description of classes at the date the Course Outline is published. The nature of classes may change during the Term after the Course Outline is published. Moodle or your primary learning management system (LMS) should be consulted for the up-to-date class descriptions. If there is any inconsistency in the description of activities between the

University timetable and the Course Outline/Moodle/LMS, the description in the Course Outline/Moodle/LMS applies.

Academic Honesty and Plagarism

UNSW has an ongoing commitment to fostering a culture of learning informed by academic integrity. All UNSW students have a responsibility to adhere to this principle of academic integrity. Plagiarism undermines academic integrity and is not tolerated at UNSW. *Plagiarism at UNSW is defined as using the words or ideas of others and passing them off 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 website with a wealth of resources to support students to understand and avoid plagiarism, visit: student.unsw.edu.au/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.

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.

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 an honours thesis or contract cheating) even suspension from the university. The Student Misconduct Procedures are available here:

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

Submission of Assessment Tasks

Work submitted late without an approved extension by the course coordinator or delegated authority is subject to a late penalty of five percent (5%) of the maximum mark possible for that assessment item, per calendar day.

The late penalty is applied per calendar day (including weekends and public holidays) that the assessment is overdue. There is no pro-rata of the late penalty for submissions made part way

through a day. This is for all assessments where a penalty applies.

Work submitted after five days (120 hours) will not be accepted and a mark of zero will be awarded for that assessment item.

For some assessment items, a late penalty may not be appropriate. These will be clearly indicated in the course outline, and such assessments will receive a mark of zero if not completed by the specified date. Examples include:

- Weekly online tests or laboratory work worth a small proportion of the subject mark;
- Exams, peer feedback and team evaluation surveys;
- Online quizzes where answers are released to students on completion;
- Professional assessment tasks, where the intention is to create an authentic assessment that has an absolute submission date; and,
- Pass/Fail assessment tasks.

Faculty-specific Information

Engineering Student Support Services – The Nucleus - enrolment, progression checks, clash requests, course issues or program-related queries

Engineering Industrial Training – Industrial training questions

UNSW Study Abroad – study abroad student enquiries (for inbound students)

UNSW Exchange – student exchange enquiries (for inbound students)

UNSW Future Students – potential student enquiries e.g. admissions, fees, programs, credit transfer

Phone

(+61 2) 9385 8500 – Nucleus Student Hub

(+61 2) 9385 7661 – Engineering Industrial Training

(+61 2) 9385 3179 – UNSW Study Abroad and UNSW Exchange (for inbound students)

School Contact Information

For assistance with enrolment, class registration, progression checks and other administrative

matters, please see [the Nucleus: Student Hub](). They are located inside the Library – first right as you enter the main library entrance. You can also contact them via http://unsw.to/webforms or reserve a place in the face-to-face queue using the UniVerse app.

For course administration matters, please contact the Course Coordinator.

Questions about the this course should normally be asked during the scheduled class so that everyone can benefit from the answer and discussion.