School of Civil and Environmental Engineering

Term 1, 2020

GMAT3150 FIELD PROJECTS 1 (inc BERRY SURVEY CAMP)

COURSE DETAILS

Contact hours	5 days off-campus at Berry plus a 2 hour per week lab class during session
Computer Lab	Wednesday, 4 - 6pm Room: CE201
Course Coordinator	Dr Bruce Harvey email: b.harvey@unsw.edu.au office: CE207 phone: 9385 4178
Other supervisors	Dr Craig Roberts email: c.roberts@unsw.edu.au office: CE412 phone: 9385 4464
	Dr Yincai Zhou email: y.zhou@unsw.edu.au office: CE410 phone: 9385 5252
	Peter Mumford email: p.mumford@unsw.edu.au

INFORMATION ABOUT THE COURSE

This is a core course for students in the BE Surveying program 3707 and the Bachelor of Civil Engineering (Honours)/Bachelor of Surveying 3776. This course includes a Survey Camp in week 3 from Monday 2 to Friday 6 March 2020 at the Berry Sport & Rec Centre. The course builds on previous surveying courses specifically GMAT 1110, 2120, 2500, and 2550. You should have already passed or been exempt from those courses. If you have attempted but failed any of the above courses, then you should contact the course convenor. The Magnet Office CAD experience in GMAT2500 is essential for the Detail Survey and Road exercises. The FIXIT experience in GMAT2550 and knowledge of Least Squares is used in the design and analysis of the control traverse and calculations and analysis for the flying fox exercise. This course provides experience that is invaluable for some of the projects in GMAT4150. Feedback from previous year's students will be available on the class Moodle site.

Please ensure you are enrolled in the course well before the start of term 1 and have visited the class Moodle site. In week 1, there will be an important class in the computer lab and there will not be an Echo recording of the class. All students in GMAT3150 should attend, if absent for legitimate reason then contact the course coordinator. The class will cover WHS matters for the field trip and the preparations needed. Groups will be formed at the meeting. There will be weekly computer lab classes, on Wednesdays at 4pm in CE computer lab. There are no lectures in this course.

COURSE PROGRAM TERM 1, 2020

Week	Activity
1 = 19 Feb	Introduction to course. Explanation of field projects. Health and Safety. Form Groups. Submit forms, payments. Practice detail survey with Sokkia. Complete and submit the Dept. of Sport and Rec.'s Medical Clearance online form, on or before **19 Feb 2020** and the UNSW Fieldwork form to the course coordinator on or before **21 Feb 2020**. The fee for accommodation and meals that each student is required to pay is **$ 342 in 2020 (to be confirmed)**. The fee must be paid to UNSW using the online system which will be described separately. The School has contributed to the costs of the camp to reduce the fee payable by students. **NO STUDENT WILL BE ADMITTED TO THE CAMP WITHOUT PRIOR EVIDENCE OF PAYMENT.**
2	Calculate road centreline coordinates, with horizontal and transition curves. Submit. Upload road coordinates into Sokkia. Organise Equipment for transport. Check instrument settings and test for errors.
3	At Berry S&R all week for survey camp. Details in separate table below. Mon – Fri 2-6 Mar 2020

Week	Activity
4	Control Survey Report
5	Control Survey Report
6	No class, work on your detail survey plans
7	Detail survey plans – your group's area - Individual
8	Detail survey plans – combined area with other groups- Individual
9	Photogrammetry and Road Plans
10	Road Plans - Group
11	Flying Fox profile – Individual. Due on or before Thu wk 11.

Survey camp week 3 activities. We aim to follow the timetable below.

When	**Survey Camp week - Activity** Groups 1-5 and 12	**Survey Camp week - Activity** Groups 6-11
Mon am	10:30am Site tour + H&S, then move into accommodation. Briefing: Control survey for detail. Site Recon - find existing survey marks, measure MGA coordinates by HH GPS	10:30am Site tour + H&S, then move into accommodation. Briefing: Road Survey Site Recon - find existing survey marks, measure MGA coordinates by HH GPS
Mon pm	Design control survey. Make recovery sketches with MGA coordinates by HH GPS. Observe control survey, book manually.	Road Survey on MGA: Set out marks on road centreline.
Mon night	Adjust control survey, or part of it if survey not complete. Practice data recording for detail survey.	Briefing: Road levelling / RTK. Download, check files.
Tue am	Continue to observe control survey, if nec. Commence electronic detail survey, record on board, use feature codes.	Finish set out marks for full length road. Close Range Photogrammetry. Check set out by RTK GPS or by radiation from alternate mark
Tue pm	Electronic detail survey continues.	Digital level of centreline & RTK heights for cross sections. Profile of flying fox cable
Tue night	Download and check files in CAD. Adjust control survey.	Briefing for Tunnel survey. Process levelling. Download data, check files.
Wed am	Electronic detail survey continues.	Tunnel Survey
Wed pm	Road Survey Briefing. Upload road centreline coordinates. Road Survey on MGA: Set out marks on road centreline.	Complete Tunnel survey by 1:30pm Briefing: Control survey for detail. Site Recon - find existing survey marks, measure MGA coordinates by HH GPS Design control survey. Make recovery sketches.
Wed night	Briefing: Road levelling / RTK. Download, check files.	Practice data recording for detail survey.
Thu am	Finish set out marks for full length road. Close Range Photogrammetry. Check set out by RTK GPS or by radiation	Observe control survey, book manually
Thu pm	Digital level of centreline & RTK heights for X sections. Profile of flying fox cable	Continue to observe control survey, if nec. Commence electronic detail survey, record on board, use feature codes.
Thu night	Briefing for Tunnel survey. Process levelling. Download data, check files.	Adjust control survey. Download and check files in CAD.
Fri am	Tunnel Survey	Electronic detail survey continues.
Fri	Depart between 2:30 and 3:30pm	Depart between 2:30 and 3:30pm

'Free' time: If an exercise is completed early you may do Photogrammetry or Flying Fox measurements, or redo parts of previous control, detail or road surveys caused by rain delays, instrument problems or blunders. On Monday to Thursday students must leave the field before 5:30pm. In a previous year there was significant rain every day and

much of the ground was flooded. So, we have several alternative survey tasks (detailed instructions are available separately).

HANDBOOK DESCRIPTION

See virtual handbook: www.handbook.unsw.edu.au/undergraduate/courses/2020/GMAT3150.html

SUMMARY OF ASSESSMENT

Details of each assessment component, the marks assigned to it, the criteria by which marks will be assigned, and the dates of submission are set out below. Further details will be discussed in class and on the class web site, and in Technical Instructions documents distributed at the field camp and available on the class web site. The tasks in the table below are clearly aligned with our objective to give students experience in each of the survey projects. More details later in this course profile.

Submissions, some form parts of assessment tasks:		**Submission due date**
Road calculations, payment and all forms submitted	Group	Pre camp, Fri of week 2 (<4pm)
Control Net design, adjustment & recovery sketches	Group	at camp at end of fieldwork
Road check survey	Group	at camp at end of fieldwork
Road Levelling	Group	at camp at end of fieldwork
Handheld GPS and RTK GNSS (& tree survey if done)	Group	at camp at end of fieldwork
Tunnel Survey	Group	at camp at end of fieldwork
Census date		15 Mar 2020
Control Survey Report	Individual	Fri of week 5 (<4pm)
Detail survey plans – your group's area	Individual	Fri of week 7 (<4pm)
Detail survey plans – combined area with other groups	Individual	Fri of week 8 (<4pm)
Photogrammetry	Individual	Thu of week 9 (<4pm)
Road Plans (marks for fieldwork, plans and report)	Group	Fri of week 10 (<4pm)
Flying Fox profile	Individual	Thu of week 11 (<4pm)

Assessment tasks: Surveying Students		**Marks %**
Smaller Projects: HHGPS, Tunnel Survey report, Flying Fox profile and CR Photogrammetry	Individual	17
Control Survey Report	Individual	19
Detail survey plans and report	Individual	28
Road Plans and report	Group Plans Individual report	30 6

Students can submit individual work for the road project instead of group plans, if they want. There is no final exam in this course and no supplementary exam. However, the course coordinator may assign additional assignment or resubmission of assessment tasks under conditions where supplementary assessment has been granted.

COURSE OBJECTIVES

To broaden and deepen the knowledge of surveying instrumentation, field methods, and surveying software, by conducting your own surveys over a one-week intensive period at a site remote from UNSW campus. The aim is to involve you in measurement, survey design, and analysis, and to give you confidence in your ability to do surveys. By the end of this course you will have some experience with handheld and network RTK GPS, road surveys, detail surveys, engineering surveys, and close range photogrammetry. Each of these aspects will be assessed as described later.

You will also gain considerable experience at managing a small group, because you will be travelling, living and working together in challenging conditions nonstop for a week at tasks that are assessed. Morale will be carefully monitored.

This course provides an environment that fosters in our students the following UNSW attributes:

UNSW attributes	Course contribution
an in-depth engagement with relevant disciplinary knowledge in its interdisciplinary context	Significant. You apply the theory you learnt in years 1 to 3 to real site problems.
the capacity for analytical and critical thinking and for creative problem solving	Significant. Especially when you design you control surveys to suit the site for a detail survey.
the ability to engage in independent and reflective learning	Significant. You will probably encounter problems as you do the surveys and will think about how to overcome them. There may be time to have a second attempt at some of your survey if you feel they need improving.
the skills to locate, evaluate and use relevant information (Information Literacy)	Some. Collecting information about the site and about practical survey techniques.
the capacity for enterprise, initiative and creativity	Significant. Especially when you do the detail survey, you may explore more efficient ways to do the survey.
an appreciation of and respect for, diversity	Significant. You will work in groups.
a capacity to contribute to, and work within, the international community	Some. You will work in groups some with students born and raised in different countries.
the skills required for collaborative and multidisciplinary work	Significant. You will work in groups and collaboration will be essential. You won't be successful if one person does "all the work". Though there is not much multidisciplinary work in this project this year.
a respect for ethical practice and social responsibility	Some. You will do a survey for a proposed new road on the site. You should think about the consequences for the site users and neighbours if that road was built and used.
the skills of effective communication	Significant. You will work in groups and will need to communicate effectively within the group or else much time will be wasted. Your reports and plans will be required to communicate clearly and effectively.

TEACHING STRATEGIES

There are no lectures in this course. However, there are briefing and debriefing sessions at the field site and training sessions. Students are expected to spend about 150 hours of active learning and reflection in this course. The field surveys will be conducted as real group work – it is not possible for one person to do most of the work and 'carry' the others in the group. Read the "TEAMWORK SKILLS DEVELOPMENT FRAMEWORK" document on the class Moodle site. Subsequent to the one week in the field there is on-campus processing of your field data, including plan production and reports, as individuals.

The teaching strategies used by the supervisors at camp will include answering students questions sometimes, leaving students alone at times to ponder their problems, at other times to stand nearby and observe the students at work, at other times to ask the students leading questions while they work in the field or in the office to enhance the learning opportunities.

This course has been very successfully conducted at another site (Morpeth) since 1976, obviously with continual modifications to the exercises as instrument and software have developed. The Berry site was used for the first time in 2008. Each year we make improvements to the survey exercises and requirements.

EXPECTED LEARNING OUTCOMES

The learning outcomes that students should achieve upon successful completion of this course are listed below. The

corresponding Engineers Australia Stage 1 Competency Standards for Professional Engineers are also shown. The full list of Stage 1 Competency Standards may be found in Appendix A.

	Learning outcomes	EA Stage 1 Competencies
1.	By the end of this course students will have some experience with handheld and RTK-GPS, road surveys, detail surveys, engineering surveys, close range photogrammetry, tunnel surveys and some aspects of cadastral surveys (finding existing marks).	PE1.3, PE1.5, PE1.6
2.	Students will also gain considerable experience at managing a small group, because they will be travelling, living and working together in challenging conditions nonstop for a week at tasks that are assessed.	PE2.4, PE3.1, PE3.2, PE3.5
3.	Produce high quality survey results, plans and reports.	PE1.3, PE2.1, PE3.2, PE3.4
4.	In-depth technical competence in Surveying and Geospatial technologies, methodologies and practice.	PE1.3, PE2.1
5.	Ability to carry out problem identification, and the design of the solution with the level of creativity and innovation appropriate to the complexity of the challenge.	PE2.1, PE3.3
6.	Ability to design and execute Surveying and Geospatial measurement, data analysis, mapping and land development projects.	PE1.5, PE2.1, PE2.3
7.	Ability to function effectively as an individual and in multidisciplinary and multicultural teams, as a team leader or manager as well as an effective team member.	PE2.4, PE3.1, PE3.2, PE3.5, PE3.6

ASSESSMENT DETAILS

This section gives the overall rationale for Assessment items and their relationship to Course Learning Outcomes. This course will use standard UNSW grades (e.g. HD, DN, CR, PS, FL). The final grade for this course will normally be based on the sum of the scores from each of the assessment tasks. There is no final exam in this course.

Specific details about each assessment task requirements and assessment criteria are supplied in files on the class Moodle site.

1. Control Survey 19%

Students do a control survey as a group of 3. This includes control survey fieldwork and recovery sketches (6%) and analysis and report of the control survey (13%). Design and measure as a group, then analyse and report as individuals. Students are given feedback in the field after they design their network and before measurements. More feedback is given during the off-campus data analysis. After marking of their reports, students are invited to individual feedback from the lecturer. Learning Outcome assessed:

- By the end of this course students will have some experience with handheld and RTK-GPS, road surveys, detail surveys, engineering surveys, close range photogrammetry, tunnel surveys and some aspects of cadastral surveys (finding existing marks).
- Students will also gain considerable experience at managing a small group, because they will be travelling, living and working together in challenging conditions nonstop for a week at tasks that are assessed.
- In-depth technical competence in Surveying and Geospatial technologies, methodologies and practice.
- Ability to carry out problem identification, and the design of the solution with the level of creativity and innovation appropriate to the complexity of the challenge.
- Ability to design and execute Surveying and Geospatial measurement, data analysis, mapping and land development projects.
- Ability to function effectively as an individual and in multidisciplinary and multicultural teams, as a team leader or manager as well as an effective team member.

2. Detail Survey Project 28%

Students do a detail topographic and contour survey of part of the site as a group of 3. This project builds on the output of the control survey project. Design and measure as a group, then analysis, plans and report as individuals. Students are given feedback in the field after they design their network and before measurements. More feedback is

given during the off-campus data analysis. After marking of their reports, students are invited to individual feedback from the lecturer. Learning Outcome assessed:

- By the end of this course students will have some experience with handheld and RTK-GPS, road surveys, detail surveys, engineering surveys, close range photogrammetry, tunnel surveys and some aspects of cadastral surveys (finding existing marks).
- Students will also gain considerable experience at managing a small group, because they will be travelling, living and working together in challenging conditions nonstop for a week at tasks that are assessed.
- Produce high quality survey results, plans and reports.
- In-depth technical competence in Surveying and Geospatial technologies, methodologies and practice.
- Ability to carry out problem identification, and the design of the solution with the level of creativity and innovation appropriate to the complexity of the challenge.
- Ability to design and execute Surveying and Geospatial measurement, data analysis, mapping and land development projects.
- Ability to function effectively as an individual and in multidisciplinary and multicultural teams, as a team leader or manager as well as an effective team member.

3. Road Survey Project 36%

Surveying students do a rural road design and set-out survey as a group of 3. Design and measure as a group. Group submission of plans, individual report submission. Students are given feedback in the field after they design their network and before measurements. More feedback is given during the off-campus data analysis. After marking of their reports, students are invited to individual feedback from the lecturer.
Geospatial Engineering students do alternative projects as a group including cadastral and Laser scanning project, Ground truth survey and UAV photogrammetry projects. Learning Outcome assessed:

- By the end of this course students will have some experience with handheld and RTK-GPS, road surveys, detail surveys, engineering surveys, close range photogrammetry, tunnel surveys and some aspects of cadastral surveys (finding existing marks).
- Students will also gain considerable experience at managing a small group, because they will be travelling, living and working together in challenging conditions nonstop for a week at tasks that are assessed.
- Produce high quality survey results, plans and reports.
- In-depth technical competence in Surveying and Geospatial technologies, methodologies and practice.
- Ability to carry out problem identification, and the design of the solution with the level of creativity and innovation appropriate to the complexity of the challenge.
- Ability to design and execute Surveying and Geospatial measurement, data analysis, mapping and land development projects.
- Ability to function effectively as an individual and in multidisciplinary and multicultural teams, as a team leader or manager as well as an effective team member.

4. Other projects 17%

Several smaller assessment tasks are included in this category. This includes testing of hand held and RTK GPS and its use for finding survey marks and determining local coordinate differences (2%); a 500m tunnel survey aiming for high accuracy (8%); a close range photogrammetry survey (3%); and a survey of a 300m catenary cable and subsequent least squares curve fit analysis (4%). These projects are conducted, and reports submitted by groups of three students. Students are given verbal feedback in the field while conducting the surveys and in the office on campus after submission of their reports.
Learning Outcome assessed:

- By the end of this course students will have some experience with handheld and RTK-GPS, road and tunnel surveys or laser scanning surveys, detail surveys, engineering surveys, close range photogrammetry, and some aspects of cadastral surveys (finding existing marks).
- Students will also gain considerable experience at managing a small group, because they will be travelling, living and working together in challenging conditions nonstop for a week at tasks that are assessed.
- Produce high quality survey results, plans and reports.
- In-depth technical competence in Surveying and Geospatial technologies, methodologies and practice.

- Ability to carry out problem identification, and the design of the solution with the level of creativity and innovation appropriate to the complexity of the challenge.
- Ability to design and execute Surveying and Geospatial measurement, data analysis, mapping and land development projects.
- Ability to function effectively as an individual and in multidisciplinary and multicultural teams, as a team leader or manager as well as an effective team member.

Group work / assessment:
At survey camps much of the field work has to be done in groups and at all times equal contributions from each student in the group should be strived for, with tasks rotated in the field and the lab and with all students contributing to decision making. Some of the reports and plans will be done and submitted by individual students – each sharing the data obtained by their group in the field. Make sure you have a copy of all data before you leave Berry. Group work submissions should ensure all students contribute significantly.

With group work assessment is more difficult to give an equitable assessment of each individual group member. So supervisors will monitor students doing group work in the field and office. When students submit a group report not all students in that group will necessarily get the same mark. Sometimes they will all get the same mark, sometimes not. The allocation of marks within a group will depend on a number of attributes such as:

- The quality (and sometimes quantity) of the project work and its report or plans,
- Participation – the role of each person in the group,
- What level of leadership was taken on for the various aspects of the project, (or were you just a field hand?)
- How many hours were logged or spent by each student?
- Discussions with students,
- Attendance,
- Communication within the group and with the supervisor
- The supervisor's discretion based on experience with other groups and previous year's students.

Therefore, when you see your mark, please note that we have given some serious consideration to your individual circumstances and tried to reward you accordingly.

Penalties for late submissions/completion: *Late work will be penalised at the rate of 10% per day after the due time and date have expired.* For information regarding the process of requesting extensions and applying for special consideration read: https://student.unsw.edu.au/special-consideration

RULES AND PROCEDURES FOR FIELD ACTIVITIES AT BERRY

Health and safety (H&S) rules and weather aspects of the practical exercises at Berry will be discussed in class and on site and documented in the associated HS forms on the class website. Contact a supervisor if in doubt. At Berry a special survey store will be in operation, under the control of Dr Yincai Zhou and Peter Mumford. Please aim for no loss or damage to any equipment. If there is a loss or damage report it to Dr Zhou.

Students are required to organise their own transport to and from Berry campsite, including the transport of their equipment. Most students usually travel by car with 2 or 3 students sharing expenses. Students who wish to travel by train should confirm train times and fares a week before and on the day of travel. The nearest rail station is Berry. Students will be picked up at Berry railway station and driven to the camp site provided they arrange details with the Course Coordinator before camp. Students travelling in their own cars will need to ascertain the exact location of the camp site; maps and GPS coordinates are available from the course coordinator.

Procedures for Checking In. Contact the Course Coordinator in the car park at the Conference Centre at **10.30 am** on the first day (Monday week 3). On arrival, each student is required to sign the register before moving into the accommodation provided. At this time, the registration numbers of cars and motorcycles parked at camp must be provided. Students who do not sign in by the specified time may lose marks. There will be a briefing on H&S matters at the start of the camp. ALL STUDENTS MUST ATTEND.

What to Bring. While bunk bed, mattress, pillow, cutlery, crockery etc. are provided in camp, it will be necessary to bring a sleeping bag or sheets and blankets, pillowcases and towels. Each student should bring their textbooks and

lecture notes on: survey computations, EDM, detail surveys, road calculations etc; calculator, writing paper etc, and a USB memory stick. Students should ensure that they wear appropriate footwear. Berry often produces very wet grass in the mornings. Thongs or sandals are highly undesirable as they do not provide adequate protection. Bring clothing that protects against windburn, sunburn, cold and rain. Bring a raincoat and umbrella. Each student should bring a **field bag** to camp suitable for carrying small items in the field.

Daily Routine at camp. Any changes will be announced as required at Berry, but as a guide - Breakfast 7.30 am, Lunch 12.00, Dinner 6.00 pm. Working Periods start: 8 am, Field work stops before sunset. Evening briefings: 6.45 pm. Supervised work will cease at 9pm.

Procedure for Checking Out. Instruments to be handed in not later than 2 pm on the last day. However to ensure students obtain sufficient quantity and quality of observations, students will not be allowed to leave camp before 2:00 pm on the last day. Check out before approximately 3:30 pm. An evening meal will not be served on the last day. Students who do not sign out are considered not to have completed the Field Project and will be required to repeat.

Site Rules. The following rules are designed to provide a set of conditions that are conducive to the satisfactory completion of all work and the maximum safety and privacy for occupants of the camp under the prevailing circumstances. This site is frequently used by school children at the same time as our survey camp. It is recommended that your cars and accommodation be kept locked and the valuable equipment not be left unattended.

Surveying Equipment: The instruments and equipment issued for the practical exercises are expensive and delicate and, if not handled with care and common sense, can be damaged easily. The need for careful handling, especially in storing away instruments, cannot be overstressed. If an instrument case cannot be closed, do not force the lid down, but leave it open and bring the instrument into the store like that. After the completion of each day's work, equipment must be returned to the STORE. This must be done before sunset. No major survey equipment is to be kept overnight in the sleeping quarters.

Noise: The evenings are generally reserved for the reduction of observations, computations and the down loading of field data into computers. It is essential that irritant noise be refrained from at all times.

Liquor: Any student found in an intoxicated state during camp will not be permitted to complete the camp and must return the following year. Drugs are not permitted in camp.

Fire: Students should take precautions against fire in the camp and in the field, in particular in extinguishing matches and cigarettes. Smoking is not permitted in buildings.

Cleanliness: The co-operation of camp residents is requested in keeping both the interior and the area around their cabins clean and tidy. Rubbish bins are provided.

Illness and Injury: Should be reported to a member of staff; first-aid supplies are available at the survey store.

Damages: As the cost of any damage to camp buildings and furniture will have to be met by the University, any damages should be reported to the Course Coordinator. The cost of any damage, which results from negligence, will be recovered from the students concerned.

Miscellaneous: Unauthorised persons are not permitted to enter the camp. Firearms may not be brought into camp.

Berry Town: Occasional visits to Berry for shopping are permitted after consulting the Course Coordinator so that he knows where all students are at all times. For safety reasons, it is recommended that students do not drink alcohol off site. **Any student who leaves the site without approval from the Course Coordinator may be dismissed from the camp and may fail the course.**

RELEVANT RESOURCES AND BLENDED LEARNING

- Messages and files for this course can be downloaded from the website https://moodle.telt.unsw.edu.au/
- Detailed Technical Instructions for the survey camp will be supplied on the class Moodle site. The website material is only for use by students enrolled in this course.
- Monitor the Moodle site and UNSW email regularly.
- You are advised to bring class notes and textbooks from the prerequisite courses with you to Berry.
- Each group is required to bring a laptop computer and pocket calculators to Berry. A field bag for each student is strongly recommended.

DATES TO NOTE

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

Supplementary Examinations for Term 1 2020 will be held on Monday 25th May – Friday 29th May (inclusive) should you be required to sit one. You are required to be available during these dates. Please do not to make any personal or travel arrangements during this period.

PLAGIARISM

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 practical reports should be submitted with a signed Plagiarism / Assessment Cover Sheet, e.g.

I/We declare that this assessment item is my/our own work, except where acknowledged, and has not been submitted for academic credit elsewhere, and acknowledge that the assessor of this item may, for the purpose of assessing this item:

Reproduce this assessment item and provide a copy to another member of the University; and/or,

Communicate a copy of this assessment item to a plagiarism checking service (which may then retain a copy of the assessment item on its database for the purpose of future plagiarism checking).

I certify that I have read and understood the University Rules in respect of Student Academic Misconduct.

Signed: .....date: ☐☐ ☐☐ ☐☐

I certify that I have read and understood the University Rules in respect of Student Academic Misconduct.

Signed: .....date: ☐☐ ☐☐ ☐☐

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Signed: .....date: ☐☐ ☐☐ ☐☐

ACADEMIC ADVICE

For information about:

- Notes on assessments and plagiarism,
- School policy on Supplementary exams,
- Special Considerations, student.unsw.edu.au/special-consideration
- Solutions to Administrative Problems,
- Year Managers and Grievance Officer of Teaching and Learning Committee, and
- SURVSOC and CEVSOC.

Refer to Academic Advice on the School website available at:
https://www.engineering.unsw.edu.au/civil-engineering/student-resources/policies-procedures-and-forms/academic-advice

SUMMARY

Dear Student, if you have read all the way to here then you have done well. I apologise for making it such a long document. So here is a summary. It is a good course. It is worthwhile to put considerable time and effort into learning this course. If you do well in this course then, in your future career, your boss and your clients will be able to rely on your results. I will be with you at camp and in the computer lab, in the field, by email, and you can visit my office for help. Let's get on with the learning ☺

Appendix A: Engineers Australia (EA) Competencies

Stage 1 Competencies for Professional Engineers

	Program Intended Learning Outcomes
PE1: Knowledge and Skill Base	PE1.1 Comprehensive, theory-based understanding of underpinning fundamentals
	PE1.2 Conceptual understanding of underpinning maths, analysis, statistics, computing
	PE1.3 In-depth understanding of specialist bodies of knowledge
	PE1.4 Discernment of knowledge development and research directions
	PE1.5 Knowledge of engineering design practice
	PE1.6 Understanding of scope, principles, norms, accountabilities of sustainable engineering practice
PE2: Engineering Application Ability	PE2.1 Application of established engineering methods to complex problem solving
	PE2.2 Fluent application of engineering techniques, tools and resources
	PE2.3 Application of systematic engineering synthesis and design processes
	PE2.4 Application of systematic approaches to the conduct and management of engineering projects
PE3: Professional and Personal Attributes	PE3.1 Ethical conduct and professional accountability
	PE3.2 Effective oral and written communication (professional and lay domains)
	PE3.3 Creative, innovative and pro-active demeanour
	PE3.4 Professional use and management of information
	PE3.5 Orderly management of self, and professional conduct
	PE3.6 Effective team membership and team leadership