UTS

Student Guide to Capstone Project

for students commencing Capstone Project in Spring Session 2017

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Email: FEITCapstone@uts.edu.au
Capstone webpage: uts.edu.au/capstone-project

UTSOnline: for students enrolled in 48006, 48012, 48016 and 48026

Revision history

Version	Author	Description of revision	Release Date
33.0	EE	Initial Release Changes to Spring 2015 Student Guide for Capstone Project [V32.0] in preparing this document include: minor changes throughout, including dates in Capstone Project Timeline amended	20-6-2016
34.0	JC	Changes to Spring 2016 Student Guide for Capstone Project [V33.0] in preparing this document include: minor changes throughout, including correction of typographical errors.	
34.1	RJ	minor changes throughout, including dates in Capstone Project Timeline amended	27-2-2017
34.2	TA	Added a capstone project timeline for students enrolling in 48026 in Autumn 2017. Changes to the registration process, progress assessment form , added supervisors comments in the "Capstone Final Report Assessment Form"	10-03-2017
35.0	TA	Changes to Autumn 2017 guide include changes to timeline and changes to final report submission requirements. In response to student feedback about the high costs of printing report, only softcopy submission required.	11-07-2017
35.1	TA	Minor changes to text	04-08-2017

This subject outline should be read in conjunction with the relevant UTS: Engineering Course Guide and the UTS Coursework Assessment Policy and Procedure Manual (which is required reading for all UTS subjects). These documents will contain additional relevant information.

All University Rules and Policies apply in this subject. If they are not referenced in this Guide that does not imply that they are not applicable.

The subject coordinator for the Capstone Project subjects changes from session to session; contact details are posted on the UTSOnline Capstone Project page. You should address all email correspondence to FEITCapstone@uts.edu.au, not to a specific academic staff member's email address.

The information in this subject outline was correct at the time of printing. Amendments will be announced and posted on the Capstone Project page on UTSOnline only.

Contents

1 What is Capstone Project all about?

Capstone Project is a very special subject, quite unlike any that you will have done previously.

You undertake it in the final session(s) of your studies and it is your opportunity to demonstrate that you can indeed meet the levels of performance expected of a professional engineer. It is a subject in which you will have individual responsibility for the timely completion of a significant engineering project under the guidance of a member of academic staff. You will be expected to do much more than "get something working". You will be expected to demonstrate a professional level of preparation, planning, execution, testing and documentation. You will be expected to meet a number of strictly enforced milestones and to take considerable initiative in overcoming obstacles. The Capstone Project is our way of determining whether you are ready to graduate. If you miss milestones or submit work that is not of a professional standard, your course completion may be delayed by one or more sessions.

YOU are responsible for getting your project done on time to an acceptable level. Your supervisor helps you but is not responsible for your performance. In particular, the submission of your final report (also called Thesis or Dissertation) is the equivalent of a final exam in a subject – if you miss the exam, you fail, if you miss the submission deadline, you fail. The only exception is Special Consideration according to UTS Rules.

The Capstone Project has important educational objectives. Although each project is different and the relative emphasis will vary, the subject will involve you in:

- Integrating knowledge and skills gained in the course as a whole;
- Reinforcing and developing competencies that have not been sufficiently emphasized in your choice of subjects or engineering practice to date;
- Defining a substantial engineering study or design task and carrying it to completion within a specified time and to a professional standard;
- Completing a comprehensive written report that places the project in context, defines its objectives, and describes the work done and the resulting conclusions or recommendations;
- Bridging the gap between your undergraduate studies and your professional future, and demonstrating professional competencies and capabilities; and
- Demonstrating initiative and creativity, and taking pride in the achievement of a difficult task.

Doing the project will assist you in developing many of the attributes expected of a UTS engineering graduate. For example:

- Values and social and community contexts - the report should describe the project's value to society;
- Maturity **-** personal responsibility for the identification and formulation of a substantial problem or objective and writing a major formal report of the work;
- Information literacy - projects will extend and further develop information retrieval, analysis, synthesis, argumentation and communication skills;
- Problem posing and solving - projects will identify a significant engineering problem and describe a solution to that problem;
- Management skills - project management, self-management and time-management skills will be needed for the completion and reporting of a substantial project within an agreed timeframe;
- Technical expertise - application of design method, technical expertise and research skills to a real, substantial and complex problem to which the solution is not known in advance; and
- Academic literacy, numeracy, oral comprehension and presentation skills - formal reporting, presentation and language skills will be developed by the requirement of writing a comprehensive, formal, structured report, correctly employing technical, mathematical and non-technical terminology.

Further reading: Engineers Australia Australian Engineering Competency Standards Appendix B (Stage 1 Competency Standards for Professional Engineers). See the page referenced at …
https://www.engineersaustralia.org.au/sites/default/files/resource-files/2017-03/Stage%201%20Competency%20Standards.pdf

1.1 Capstone Project numbers

There are two *numbers*: the subject number in which you are enrolled and the individual capstone project number assigned to you by the Faculty.

1.1.1 Capstone subject numbers

Capstone Projects are either 6 credit points (cp) or 12cp – you complete the capstone project credit point requirement specified in your course study plan. If your course requires only a 6cp project and you wish to complete a 12cp project, you can use one of your electives (if available) to make up a 12cp project.

Students undertaking 12cp projects are strongly encouraged to complete their project over two sessions.

If you do not complete your project in the nominated session then you will continue enrolling in the subject that you previously enrolled for subsequent sessions until the project is complete. Refer to the "When things go wrong" section below.

Enrolment

You enrol in Capstone Project via My Student Admin in the same way you enrol in any other subject, the same procedures and deadlines are applicable. Also, you should be aware that My Student Admin enforces subject prerequisite constraints. Refer to the UTS:Engineering Handbook for details of prerequisite and co-requisite subjects. Special Consideration and/or Late Withdrawal may not be considered in cases where students have not completed prerequisite and co-requisite subjects.

All capstone project subjects run in Autumn and Spring sessions only, **not Summer or Winter.**

If you are not officially enrolled, you cannot be awarded a mark/grade for the subject.

It is your responsibility to ensure you are enrolled in the correct subject number. The numbers are described in the table below.

CAPSTONE PROJECT SUBJECT NUMBERS

Subject number and name	Description
41030 Engineering Capstone	You enrol in **41030** a 6cp subject, if you commenced your degree in 2015 or later and have successfully completed the prerequisite subject 41029 Engineering Research Preparation.
48006 Capstone Project	You enrol in **48006** if you are doing a 6cp project over one session.
48012 Capstone Project	You enrol in **48012** if you are doing a 12cp project over one session. It is only possible to enrol in this subject via an eRequest which must include a supporting statement from your supervisor. In general, supervisors do not support this mode as it does not provide sufficient time to satisfactorily complete a 12cp project.
48016 Capstone Project Part A **and** **48026** Capstone Project Part B	You enrol in **48016** (Part A) in the first session and **48026** (Part B) in the following session for a 12cp project completed over two sessions. Both subjects are weighted 6cp.

Graduation

Capstone Project is undertaken in your final sessions of study prior to graduating. You are reminded that you can check your requirements/eligibility for graduation via the Student Centre prior to your final session of study. This will provide time for your graduation status to be confirmed, and for any administrative issues to be addressed to reduce the risk of delaying your graduation.

1.1.2 Individual Capstone Project number

You will receive an email from feitcapstone@uts.edu.au with your Capstone Project Number, in the form, S17-NNN, after you have submitted Appendix A (Capstone Registration online Form) and it has been approved by your Capstone Supervisor. You should email FEITCapstone@uts.edu.au if you have submitted your online Registration form and have not received the capstone project number email, a week after close of online registrations.

You are advised to quote this number on all correspondence, it is required on your final bound report. Correspondence that does not include your Project Number may not receive a response, or at best will be delayed.

Example subject	[S17-888]	Site visit on 31-4-17
line for emails	[S17-888]	Rescheduled meeting Week 3
	[S17-888]	Draft literature review

The same format is required for all Capstone Project administration-related email inquiries which should be directed to FEITCapstone@uts.edu.au .

The Capstone Project Number links you, your project and your supervisor. It is a requirement of the subject. If you cease one project and commence another, you will be required to apply for a new number.

1.2 Documentation control

After reading the section "What is capstone project all about?" you should have a clear idea about the educational objectives and attributes you will need to demonstrate. Documentation control is considered normal practice for any professional engineer.

You are required to maintain a copy (paper and/or soft copy) of everything related to this subject until the end of Week 4 of the session *after* you complete this subject. You may be required to produce this material at any time during this period to verify your work.

This subject requirement will assist you, your supervisor, and the subject coordinator to manage a wide range of scenarios that routinely arise. For example, your supervisor may become unavailable for the final few weeks of session at short notice. A new supervisor will be allocated, and will require information such as an up-to-date project plan and deliverables detailed in your proposal or progress report. The subject coordinator would be unlikely to support a claim by you that you were disadvantaged if you were unable to produce this documentation.

Keeping a logbook or journal

As identified above, documentation control is considered normal practice for any professional engineer. During the course of your work, a project logbook (journal) would normally be used to serve as a record of the way in which the project progressed during the course of the session. Salient points discussed at meetings with the supervisor (i.e., suggestions for further meetings, changes to experimental procedures) should be recorded by the student in order to provide a basis for subsequent work. This logbook is not a substitute for the written report; its purpose is to accurately document work as it is carried out.

For these reasons it is recommended that you maintain in your project logbook; your planning; your "designs"; their decisions and the basis for them; records of relevant meetings, telephone conversations etc. e.g. records of agreements, actions, changes to intentions, scope, plans and designs (and the reasons for them). It is a record of the progress of the project as it occurred, together with a personal journal outlining any significant learning which has occurred for you during the course of the project - illustrated by any critical incidents which stimulated that learning. The project logbook and journal are "working" documents and as such are not expected to be necessarily "pretty". Clarity (e.g. in organisation and structure) and legibility is all that is required. The logbook may be formally assessed; it is your record and should be shown to your supervisor prior to assessment.

If required, the logbook serves a very useful purpose as evidence that the content of the submitted report is in fact your work.

1.3 Capstone Project awards

1.3.1 Dean's Best Presentation Award

The best Capstone Project presentation in each Engineering Field of Practice will be selected to present at the Dean's Prize Night. Program Heads are responsible for nominating one candidate from each Field of Practice.

The Dean's Prize is a very prestigious competition that the Faculty introduced to encourage and reward excellence in Engineering Communication. This prize rewards the importance and need of engineers to be able to communicate their technical ideas, concepts and projects in a manner that can be easily understood by an audience that may not have their level of technical expertise, and at the same time not losing their content. See Appendix G.1 for the Evaluation Guidelines for the Dean's Prize.

Students are required to give a 12-minute presentation of their work on the Dean's Prize Night followed by a 3-minute questioning session. Dean's Prize Night is a special event attended by industry representatives, friends, parents, colleagues and UTS Engineering Staff. The Dean's Prize is judged by a panel invited by the Dean. Although the winner is announced on the evening, awards are presented at the Annual Faculty Awards Night. All students presenting at the Dean's Night will receive a certificate of participation.

1.3.2 Alan Chappel Award for Engineering Innovation

The Alan Chappel Award for Engineering Innovation is a very prestigious competition and is awarded to the student whose Capstone Project embodies an innovation deemed by a selection panel, to have the greatest potential for commercial development. Industry representatives will judge for the award from students presenting at the Dean's Presentation Night. The award is an Innovation Certificate and a cheque. The winner is announced at the Dean's night and presented at the faculty awards night. See Appendix G.2 for the Evaluation Guidelines for the Alan Chappel Prize.

1.3.3 Best Poster Award

This awarded to the D/HD student who presents the best Capstone Project poster displayed at the Capstone Project Presentation Day. This competition is open to all D/HD capstone students. A Certificate and cheque is awarded. Refer to Appendix F for further details. It is announced at the Dean's night. See Appendix G3 for the Evaluation Guidelines for the Best Poster Award.

2 The phases of Capstone Project

In this section the process of doing a project is broken down into a number of distinct phases. The activities that you need to be doing in each phase are outlined below.

2.1 The Exploration Phase (in the 12 months leading up to commencing your project)

The essential aim of the exploration phase is to search for a suitable topic for your project. You have the option of proposing a topic which should be approved by your supervisor. Being able to pose questions worthy of investigation is an important skill that all engineers should cultivate, as out of such questions come innovations, new product ideas, and solutions to long-standing problems. Topics may be suggested in many ways. In your everyday activities you interact with countless systems that have been designed by engineers - try to identify weaknesses in these systems and come up with ideas for improvements. Many innovations come about when individuals make the connection between a new technology developed for a particular purpose, that has an application in quite a different area. For example the GPS satellite navigation system was developed to provide missiles with location information. You might pose the question "could GPS and radio communications replace conventional railway signalling as a means of separating trains"?

Another important source of topics will be your Engineering Experience placements. Most employers recognize the significant value to them of a student undertaking a project that is related to their business. Therefore the topic may be suggested by your employer, or it might be something that you notice as needing to be done, that you in turn suggest to your employer. It might, however, simply be an idea that occurs to you in the context of your work. Your academic subjects may also have projects or assessment tasks in them that lend themselves to being extended into a project. Talking to academic staff or other engineers you meet at work or elsewhere about their interests may also trigger ideas.

The trick is to find a topic that is challenging yet doable. Many possible topics will no doubt occur to you. You should explore each - some you may dismiss as being impractical, or requiring equipment or knowledge that it is simply not viable for you to access in the time you have available. With others you may find a goldmine of useful sources and a "sponsor" either employer or academic who is interested in the outcome.

During the session before your intended enrolment in capstone project you should be fairly clear about your intended topic area. Having done so, you are ready to begin the Preparation Phase.

2.2   Preparation Phase

In the months leading up to commencing your project, the better you are prepared the easier you will find it to meet the deadlines and successfully complete the Capstone Project when you finally enrol in it. You may also want to do certain subjects as electives or even undertake short courses as preparation for your project. For example, with electronics projects, a course on Protel printed circuit board development tools might be extremely useful. It is highly likely that you will use a specialist software package in your project - you could learn this package either on your own or Online based tutorial or short course.

Another important preparation phase activity is securing an academic supervisor. It is your responsibility to secure a UTS: Engineering academic as your supervisor. Staff from other areas of the University (e.g. IT, Nanotechnology, DAB) may also be available to supervise your project, and this will require the approval of the Capstone Project subject coordinator.

Obviously you would like to have a supervisor who is highly knowledgeable in the area of your topic, and you will become aware of this through contact with staff in later stage subjects. All academic staff supervise Capstone Project students, and most will want to confirm their students as soon as they can so they can plan work commitments for the following session. You may need to chat with a number of potential supervisors to see how comfortable they would feel about supervising your topic.

So the earlier you make contact with potential supervisors, the more likely you will secure the staff member you want. If you miss out on who you wanted, your supervisor will still guide you through the Capstone Project process even if they're not necessarily an expert in your topic area.

There may be start-of-session briefing sessions. Please see the announcements made on the UTS Online, capstone page, to check if any briefing sessions have been scheduled.

Also, a video has been created for your convenience, please refer to http://tinyurl.com/4004khf

Students are also encouraged to review similar past students' Capstone Projects (see "Capstone library and abstracts" in the Capstone webpage which can be borrowed via FLP (FEIT Learning Precinct CB11.05.300). Please ask the FLP staff for assistance.

2.3   Capstone Project Registration Form (*Appendix A*) - Online

The online registration form is the Faculty's way of linking you, your project, an academic supervisor, and the project number which is allocated.

Importantly, completing the Registration form online does not mean you are formally enrolled as far as the University is concerned! Refer to the Enrolment section in this guide for details on how to enrol in capstone project.

You should submit your Capstone Registration Form online via clicking on the "Registration form" link found under Enrolment procedure at www.uts.edu.au/current-students/feit/undergraduate/capstone-project by the end of Week 1.

If your supervisor accepts your registration, you will receive an "approved" email. If you miss the deadline or your nominated supervisor "rejects" your registration, please withdraw by the census date.

Students should be aware that the only circumstances in which an academic would be prepared to take on a late capstone project student would be when the proposed topic is of such interest to them that they are prepared to not only forgive the lateness but to take on the extra work load.

If your project will require Intellectual Property Agreements or Confidentiality Agreements, these should be prepared and signed by the relevant parties identified and attached to your Project Proposal. *Please be aware that the Subject Coordinator is required to have all such documents reviewed by UTS: Legal before signing.* This may take some time, so act as early as possible to reduce the risk of delays. Refer to Section 4.3 of this guide for further information.

2.4   Proposal Preparation (in the weeks leading up to the start of session)

This phase starts on the day you secure an academic supervisor. In essence the preparation phase consists of definition and analysis, including a literature search, whereas the enrolled phase consists of design, implementation, and verification.

During this phase, guided by your supervisor, you will refine your proposal to the point where you can demonstrate that it is worthy of undertaking and can be completed by you in the time available. In particular you must give evidence that you have the knowledge and skills needed to undertake the project. The 'angle' on the topic may change significantly from what you originally had in mind as a result of your supervisor's input. For industry/community based projects an external co-supervisor may need to be involved in the preparatory phase discussions.

The proposal provides the basis of a contractual agreement between the student and her/his supervisor regarding project objectives. Since the work program constitutes a contract, the student should ensure that it represents an achievable contract on their part. For example, any problems likely to be encountered in acquiring equipment or components which may not readily be available should have been addressed.

The proposal is to include a preliminary plan outlining the tasks required to achieve the anticipated outcomes, the major milestones, and estimates of time, resources and assistance required. The plan is indicative only and it is accepted that changes may be needed as the project proceeds. Evidence of agreement from staff, or external contacts, from whom resources will be made available should be included.

The site where it is proposed to undertake the work is to be nominated and any special facilities or equipment required should be identified together with the proposed provider or source. A letter of agreement to use site, facilities or equipment, and Intellectual Property Agreements or Confidentiality Agreements, is to be provided on the organization's letterhead and signed by an officer of the organization having the responsibility and authority for such matters.

A UTS EHS Risk Assessment is required to be completed for all Capstone Projects.

It is your responsibility to carry out your project to time and to specification. You must consider all factors that could cause problems such as dependencies on component deliveries or on other people, other subject workloads, your social situation etc. As a professional engineer you cannot say the fault was with other people! Possible areas of uncertainty and risk are to be identified with proposed strategies and contingency plans for avoiding, minimizing or otherwise taking account of them. Refer to Appendix C for more information about the Project Proposal.

2.5   Proposal acceptance

Your supervisor will decide whether your proposal is acceptable. Think of this procedure as part of an Engineering Quality Assurance program that ensures traceability of the supervisor's acceptance of your proposal. If your supervisor is satisfied with your proposal, they will complete and sign a Capstone Proposal Assessment Form (see Appendix C). You must submit your proposal and completed assessment forms (including Appendix B), your project UTS EHS Risk Assessment Form (download from UTSOnline), as well as any signed Intellectual Property Agreements or Confidentiality Agreements to the FEIT Dropbox 888 outside the FLP CB11.05.300. Refer to Timeline for deadlines. The proposal will not be returned (you must keep a copy), and you may continue to work on your Capstone Project. If your supervisor is not satisfied, you should withdraw from the subject before close of business on the census date. If you fail to withdraw by this date, you will be charged tuition fees.

2.6   Working on the Project

You will now carry out your project in accordance with the plan you submitted. The method and frequency of your communication with your supervisor should be agreed as part of the proposal phase and you should follow whatever arrangements you agreed upon. Typically you will communicate with your supervisor at a minimum of once a fortnight, either by email or face-to-face. If it is a work or community-based project you may have a local supervisor as well as a UTS supervisor. It is highly desirable that all three of you have at least one meeting on site.

Typically you will communicate with your supervisor at a minimum of once a fortnight, either by email or face to face.

2.7   Readiness Assessment (during the last 3 weeks of session)

2.7.1   48016 Capstone Project Part A

Students enrolled in a 12cp project over two sessions are required to submit a progress report. The report will act as a guide for your supervisor in their assessment of your satisfactory progress during the first session.

Students enrolled in a 12cp project over two sessions are required to submit a progress report

Your supervisor can recommend a Q (result pending) grade be awarded if they believe you have demonstrated satisfactory progress. The Q grade will be changed pending the grade you receive for 48026 Capstone Project Part B in the following session. *Enrolment in 48026 is not automatic, and you should complete your enrolment in the usual manner.*

Enrolment in 48026 is not automatic, and you should check your enrolment in the usual manner.

Your supervisor will recommend a Z (fail) grade be awarded if they believe you have not demonstrated satisfactory progress, and you will have to commence your project from the beginning.

Punctual submission of your Capstone Progress Report Assessment, with a copy of your completed Appendix B and updated (if necessary changes have been made) copy of your proposal, is a requirement of the subject. This submission needs to be signed-off by your supervisor. These documents are to be submitted through the FEIT Dropbox 888 outside the FLP CB11.05.300. A Z (fail) grade may be awarded automatically by the Subject Coordinator where the student does not submit the progress report and signed Capstone Progress Report Assessment form by the submission date.

A, Z (fail) grade may be awarded … where the student does not submit the progress report and green assessment form by the submission date.

Refer to the Timeline for deadline details. Refer to Appendix D for more information about the Progress Report.

2.7.2   Other Capstones Distinction or High Distinction Nomination

End of Final SVF week (SVF) Friday is the deadline to decide whether you are aiming at a Distinction or High Distinction grade (for students in 48006, 48012 and 48026). This will be a decision made with your supervisor, you must have their support. You and your supervisor (and perhaps the assessor as well) should complete a 'trial assessment' using Appendix B; this will help to confirm your assessment criteria indicators, and confirm your D/HD candidacy (i.e., your 'trial' mark should be 75+).

This will be a decision made with your supervisor, you must have their support.

You and your supervisor … should complete a 'trial assessment' using Appendix B

If you wish to be examined as a potential D or HD candidate, you are required to submit a 250-300 word abstract of your project in week 10. The abstract must be submitted in electronic format on the template provided in subject documents on UTSOnline. Submit completed abstract through https://my.feit.uts.edu.au/projects/forms/dhd.

… potential D or HD candidates are required to submit a 250-300 word abstract

Your supervisor must review and approve your abstract prior to submission. It is recommended that you discuss the exact wording of this abstract with your Supervisor prior to the end of Review week to ensure it encapsulates the essence of your project and only requires minimal amendment prior to submission. Your supervisor will also advise you of the assessor for your project, their name must be included on your submitted abstract. Students that do not comply with these requirements may be excluded from the D/HD presentation.

Your supervisor must review and approve your abstract prior to submission.

Your supervisor will also advise you of the assessor for your project, their name must be included on your submitted abstract.

D or HD candidates are also required to make a 12-minute presentation followed by 3 minutes of questions. The presentation will be given at the Faculty's Capstone Project Presentation Day held on the Thursday and Friday of the second week of the Final Assessment Period. Your abstract will be published in the Presentation Day proceedings.

2.8 Final report submission

Friday of the first week of the final assessment period is final report submission day. This date has the same significance as an exam – if you miss it you have a high risk of failing.

For the majority of projects, you will submit an electronic copy of your report (PDF format) through UTSOnline TURNITIN. However, if your project work is covered by a non-disclosure agreement (eg. confidentiality or restricted IP) then you should submit your report via email only to FEITCapstone@uts.edu.au and cc: your supervisor. The reason for this is that once submitted to TURNITIN we cannot guarantee confidentiality. In all cases you also need to submit a filled in Appendix B (Capstone Assessment Form) directly to your supervisor. Refer to Appendix E for details.

2.9 Capstone Presentation Day

This is for projects identified as potential D or HD. Presentation Day is your opportunity to present your project to your peers, Faculty staff and invited industry guests. You are encouraged to invite your mentors, colleagues, parents, fellow students and friends. There are multiple parallel sessions, each chaired by an academic from the Faculty. You are allowed **12 minutes for the presentation** of project work followed by 3 minutes for questions. As a guide you should include:

- Purpose of the project and your <u>individual</u> contribution (i.e. what you were responsible for);

- A brief overview of the entire project;

- One or two pertinent aspects of the project which clearly demonstrate technical competence (e.g. how a particularly difficult problem was overcome, an original design developed or factors determining the choice of circuit configuration, components etc.); and

- Any equipment demonstrations should be included in the 12 minutes.

Full use should be made of previously prepared material e.g. electronic scanned material or slides showing equipment, equations, graphs and diagrams which illustrate the main parts of the project. Brief demonstrations of equipment are encouraged. PowerPoint and electronic video projection will be available.

After this presentation there will be **3 minutes for questions and discussion**. The Assessor has the right to ask the first questions, then the rest of the audience as invited by the session chair.

Presentation schedules are prepared during the final weeks of session and finalised a few days before the Presentation Day. Refer to the UTSOnline Capstone Project pages for further details.

If your project is covered by a confidentiality agreement, you may need to request a "closed" presentation to a restricted audience. Discuss this with your supervisor and email FEITCapstone@uts.edu.au to request this as needed.

2.10 Final report assessment

Your project is assessed by your supervisor and, where requested, another member of staff confirmed by the subject coordinator. In the case of potential D/HD projects, your project is assessed by your supervisor and at least one other member of staff confirmed by the subject coordinator. Further, appropriate moderation processes are used in project assessment. In all cases, the assessment is based on the material that is submitted online.

Your assessor(s) may wish to interview you about your report as part of the assessment process. This may be necessary, for example, if the specific contribution that you have made to solve the problem is not made explicit. If you have met regularly with your supervisor this is unlikely to be a problem.

The indicators you have identified on your Appendix B Project Assessment Form will provide the basis of your final assessment. Critical to this process is your requirement to document in the table (of indicators) exactly where or when or how you have met the criteria described by the indicator. You must be specific – include section numbers and/or page numbers from your report.

You are required to include your self-assessment of your project work. It is your assessment of how well you believe you have met your project assessment criteria. You will use the following scale: (0) not at all; (1) unsatisfactory; (2) passable; (3) creditable; (4) with distinction; (5) with high distinction. As a guide, these assessments (out of 5) would align with marks/grades of (say) 0Z, 40Z, 60P, 70C, 80D and 90H and are consistent with the UTS descriptors.

Further, as per UTS Assessment Guidelines, High Distinction grades are awarded to work which is considered <u>outstanding in all assessment criteria</u>. This work is of a depth, academic rigor and quality that they are published in refereed conference or journal publications.

Students may appeal the grade awarded via the normal UTS procedures.

3   When things go wrong

Capstone Project offers you an opportunity to challenge yourself in a relatively safe learning environment. There are two different safety nets which may afford a mechanism in case things go wrong during your project:

- Subject based mechanisms, administered within the Faculty:
    Renegotiation of intended outcomes;
    Extension of time.
- UTS based mechanisms, administered by the University:
    Late withdrawal;
    Special Consideration.

3.1   Renegotiation of intended outcomes

Inevitably, in any project, particularly where research and investigation are involved, obstacles will come up that can only be negotiated by redefining the plan and possibly the intended outcomes. This is acceptable if the circumstances truly warrant it.

Should this occur, you should **advise your supervisor immediately in writing** – email preferably, unless your supervisor has indicated an alternative preferred means of written communication. The circumstances will always include consideration of the remaining time available. The outcome should be a renegotiated proposal that is documented and signed-off by you and your supervisor. Refer to the Documentation Control section above for reasons why this may be important.

3.2   Extension of time

Should this be required, you should **advise your supervisor immediately in writing** (email preferably) who will make a recommendation which is forwarded to the Subject Coordinator who will action it. A supervisor may support a short extension for the delivery of your report that may assist you to fully deliver on the intended goals. Note that although an extension may be supported by your supervisor, it must still be <u>approved</u> by the subject coordinator.

Importantly, **you must clearly identify why the circumstances you find yourself in may be beyond what would be considered reasonable contingency planning or control by a professional engineer**. You are required to provide sufficient evidence with your letter (email) so your supervisor can make a recommendation. This evidence may include dates and details, letters (emails) from employers, industry supervisors, or other project stakeholders.

You should be aware that in these cases, the burden of extension falls directly on your supervisor to complete the assessment of your work in a shorter time frame at an already very busy time of session. As a result, such extensions are rare and do not exceed 7-10 days, and would not be considered for D/HD project work after Week 12 of session.

Some events that normally do NOT qualify for an extension include:

- non-delivery of components ordered in the final weeks of session;
- additional workplace responsibilities in the final weeks of session;
- inability to contact your supervisor during planned absences

Events that MAY qualify are those that are genuinely disruptive and could not be reasonably accommodated in a professional task schedule:

- overseas workplace responsibilities for several weeks late in session;
- legal, safety, resource surprises that reasonable enquiries could not have foreseen.

3.3   Late withdrawal

All requests for *Late Withdrawal – with or without academic penalty (and with or without financial penalty)* are to follow the UTS procedure and should be submitted via the Student Centre. Further information is available from the Student Centre.

3.4   Special Consideration

You can apply for special consideration using the University procedures. Special consideration is used in cases such as: *serious illness or psychological condition – such as hospital admission, serious injury or illness, severe anxiety or depression; loss or bereavement – such as death of a close family member, family/relationship breakdown; hardship/trauma – such as victim of crime, sudden loss of income or employment, severe disruption to domestic arrangements.* Further information http://www.sau.uts.edu.au/assessment/consideration/ is available from the Student Centre.

4   Related matters

4.1   Your Supervisor

Once your supervisor has been confirmed, they will be your first contact in dealing with all academic and the majority of administrative matters associated with the Capstone Project subject. However, the initiative must come from you to make appointments and meet the published deadlines. The subject is designed to prove that you are capable of independent work at a professional level. Your supervisor will not necessarily have expert knowledge in the technical area of your topic. Their role is to guide you through the process and to challenge your assumptions. You should seek assistance from wherever it is available - fellow students, engineers at work, postgraduate students and academic staff.

4.2   The timeline

The tables on the following pages set out the phases involved in the project and include key deadlines. Tables shown are:

- for students completing their project over one session (48006 and 48012); and
- for projects undertaken over two sessions (48016 + 48026).

Students should check the 'Announcements' on the Capstone Project webpage (UTSOnline) at regular intervals in case dates or deadlines are varied.

The timeline may be too restrictive in some circumstances (such as completing project work off-shore). Supervisors can recommend individual timelines for particular students provided the timeline is approved by the Capstone Project Subject Coordinator. These details must be included in the written proposal.

Students must obtain the approval of their supervisor before undertaking work on their project outside of the Autumn and Spring sessions. For example, a student may wish to complete preliminary work (e.g. literature review) over the summer period prior to enrolling in the subject in Autumn. In all such cases, students and supervisors must document and sign-off on the proposed work and a review of this work must also be reported in the project proposal.

Capstone Project Timeline

Week	Activity/Task	Important notes
Prior to the session	Exploration phase: using your own experience (in course and at work) come up with a number of ideas that may lead to a worthwhile project.	Ideas could surface at any time during the course with Engineering Experience 1 and 2; and UTS and other University webpages are particularly fruitful sources.
Jan-2017	Commence a broad based literature survey, refine a short list of potential proposals. Ascertain interests of staff and identify and speak with potential academic supervisors. Secure your supervisor.	Any time before Capstone Project enrolment If you leave this too late you may find it difficult to find staff prepared to discuss/engage in your project.
	Add correct subject number for capstone project to your UTS enrolment (either 48006 or 48012)	
	Commence work on the preparation of a formal proposal. Refer Subject Guide Appendices B & C.	Continue to maintain regular contact with your supervisor. Develop project plan, investigate state of the art, source parts, arrange laboratory access, risk assessments
Week 1 24-07-2017	View the subject briefing video http://tinyurl.com/4004khf Read the Capstone Student Guide again for updates	Available on the Capstone Project webpages
Week 1	Continue work on the preparation of a formal proposal. Refer Subject Guide Appendices B & C.	Continue to maintain regular contact with your supervisor. Develop project plan, investigate state of the art, source parts, arrange laboratory access, risk assessment
Week 1 Friday 28-07-2017	Complete your Capstone Registration Form(Appendix A) online via clicking on the "Registration form" link found under Enrolment procedure at www.uts.edu.au/current-students/feit/undergraduate/capstone-project	Secure a UTS academic supervisor using the Capstone Registration Form (Appendix A) –supervisor must approve your submitted form. Submission of the registration form signifies your agreement of the Student and Supervisor Declaration.
Week 2 Monday 31-07-2017	Finalise a (draft) proposal and submit it to your supervisor.	Make prior appointment with supervisor; include a completed (draft) Appendix B
Week 3 Monday 07-08-2017	Contact supervisor to receive feedback on proposal over the week	Refine proposal in the light of feedback given and submit final written proposal to supervisor
	Last day to add Capstone Project to your enrolment	Ensure you are enrolled in the correct Capstone Project subject (i.e. 48006 or 48012)
Week 4 Friday 18-08-2017	Submit final proposal, Proposal assessment form, completed Appendix B and EHS Risk Assessment(all signed by supervisor) to the FEIT Dropbox 888 outside FLP CB11.05.300	This is a compulsory requirement. Make prior appointment with supervisor.
Week 5 Friday 25-08-2017	Census Date	Last day to withdraw from subjects without academic and financial penalty
Week 5-10	Work on project, meet regularly with supervisor	If necessary project proposal re-negotiated
Week 10 Friday 06-10-2017	Draft capstone report and demonstrate prototype to supervisor. Decide whether a D or HD grade is a possibility, prepare draft abstract	D/H grades must be supported by your supervisor. Your supervisor will need to confirm an assessor and include them on your abstract
Final Stuvac Week Friday 27-10-2017	Potential D/HD grade projects submit 250-300 word abstract	Refer to Capstone pages on UTS Online for submission details This is a compulsory requirement for D/HD grade projects
1st week of Final Assessment period Friday 03-11-2017	Submit your Final Report in PDF format to UTS Online – turn-it-in submission link and a filled in Appendix B (Capstone Assessment Form) directly to your supervisor	Refer to Appendix E for details
2nd week of Final Assessment period Thursday 09-11-2017 Friday 10-11-2017	Capstone Project Presentation Day, includes poster presentation	Refer to subject guide for details and capstone webpage for presentation schedule
Thursday 30-11-2017	Dean's Prize presentations	Refer to subject guide for details, web site for dates and presentation schedule – you may be invited to present or you may choose to attend

Capstone Project Timeline

Week	Activity/Task	Important notes
Prior to the session	Exploration phase: using your own experience (in course and at work) come up with a number of ideas that may lead to a worthwhile project.	Ideas could surface at any time during the course with Engineering Experience 1 and 2; and UTS and other University webpages are particularly fruitful sources.
Jan- 2017	Commence a broad based literature survey, refine a short list of potential proposals. Ascertain interests of staff and identify and speak with potential academic supervisors. Secure your supervisor.	Any time before Capstone Project enrolment If you leave this too late you may find it difficult to find staff prepared to discuss/engage in your project.
	Add correct subject number for capstone project to your UTS enrolment (i.e. 48016 Capstone A)	
Week 1 27-07-2017	View the subject briefing video http://tinyurl.com/4004khf Read the Capstone Student Guide	Available on the Capstone Project webpages
Week 1	Continue work on the preparation of a formal proposal. Refer Subject Guide Appendices B & C.	Continue to maintain regular contact with your supervisor. Develop project plan, investigate state of the art, source parts, arrange laboratory access, risk assessment
Week 1 Friday 28-07-2017	Complete your Capstone Registration Form(Appendix A) online via clicking on the "Registration form" link found under Enrolment procedure at www.uts.edu.au/current-students/feit/undergraduate/capstone-project	Secure a UTS academic supervisor using the Capstone Registration Form (Appendix A) – supervisor must approve your submitted form. Submission of the registration form signifies your agreement of the Student and Supervisor Declaration. Retain your approved Appendix A email for your records
Week 2 Monday 31-07-2017	Finalise a (draft) proposal and submit it to your supervisor.	Make prior appointment with supervisor; include a completed (draft) Appendix B
Week 3 Monday 07-08-2017	Contact supervisor to receive feedback on proposal over the week	Refine proposal in the light of feedback given and submit final written proposal to supervisor
	Last day to add Capstone Project to your enrolment	Ensure you are enrolled in the correct capstone project subject (i.e. 48016)
Week 4 Friday 18-08-2017	Submit final proposal, Proposal assessment form, completed Appendix B and EHS Risk Assessment (all signed by supervisor) to the FEIT Dropbox 888 outside FLP CB11.05.300	This is a compulsory requirement. Make prior appointment with supervisor.
Week 5 Friday 28-08-2017	Census Date	Last day to withdraw from subjects without academic and financial penalty
Week 5-11	Work on project, meet regularly with supervisor	If necessary project proposal re-negotiated
Week 11-12	Draft capstone progress report. Arrange a meeting with your supervisor to receive signature for Progress Assessment form.	Use this opportunity to arrange demonstrations to your supervisor such as working models and prototypes – a final wrap-up of work completed during the session
1st week of Final Assessment period Friday 03-11-2017	Submit final progress report, Capstone Progress Assessment form and Appendix B(with supervisor's signature) to the FEIT Dropbox 888 outside FLP CB11.05.300	Failure to submit a satisfactory progress will result in a fail grade recorded and requirement to repeat the subject
2nd week of Final Assessment period Thursday 09-11-2017 Friday 10-11-2017	Capstone Project Presentation Day, includes poster presentation. Students in 48016 are strongly advised to attend	These Presentation Days are for students who are completing their projects this session (48006, 48012 and 48026). Refer to webpages for presentation schedule.
Thursday 30-11-2017	Dean's Prize presentations	Refer to subject guide for details, website for dates and presentation schedule – you may choose to attend this event

See over for Capstone Project Timeline for 48026 in Autumn 2018

Capstone Project Timeline

Week	Activity/Task	Important notes
	Add 48026 to your UTS enrolment – this is not automatic, you must do this yourself	
Week 1 Monday 12-03-2018	Students with satisfactory progress reports continue work on project, meet regularly with supervisor	
Week 2 Monday 19-03-2018	**For students who failed 48026 in a previous session or who have discontinued enrolment between 48016 to 48026**; prepare an updated written proposal (as per 48016) and submit it to your supervisor for review. You should obtain feedback from your supervisor, revise your proposal. Have your final version signed-off by your supervisor using the Capstone Proposal assessment form.	Examples of discontinued enrolments may include: unexpected requirement to travel abroad for work; unexpected personal matters. All breaks in enrolment from 48016 to 48026 must be supported by the project supervisor and then approved by the capstone project subject coordinator. For students repeating 48026, there may only be minimal change from the updated proposal submitted with your 48016 Progress Report. Your timeline (at least) will need updating.
Week 3 Monday 26-03-2018	Last day to add Capstone Project to your enrolment	
Week 4 Friday 06-04-2018	If necessary, submit revised proposal, Capstone Proposal assessment form, Appendix B and updated EHS Risk Assessment form (all signed by supervisor) to FEIT Dropbox 888 outside FLP CB11.05.300	Only for students who failed 48026 in a previous session or who have discontinued enrolment between 48016 to 48026.
Week 5 Monday 09-04-2018	Census Date	Last day to withdraw from subjects without academic and financial penalty
Weeks 5-10	Work on project, meet regularly with supervisor	If necessary project proposal re-negotiated
Week 10 Friday 25-05-2018	Draft capstone report and demonstrate prototype to supervisor. Decide whether a D or HD grade is a possibility, prepare draft abstract	D/H grades must be supported by your supervisor. Your supervisor will need to confirm an assessor and include them on your abstract
Final Stuvac Week Friday 15-06-2018	Potential D/HD grade projects submit 250-300 word abstract	Refer to Capstone pages on UTSOnline for submission details This is a compulsory requirement for D/HD grade projects
1st week of Final Assessment period Friday 22-06-2018	Submit your Final Report in PDF format to UTS Online – turn-it-in submission link and a filled in Appendix B (Capstone Assessment Form) directly to your supervisor.	Refer to Appendix E for details
2nd week of Final Assessment period Thursday 28-06-2018 Friday 29-06-2018	Capstone Project Presentation Day, includes poster presentation	Refer to subject guide for details and capstone webpage for presentation schedule
TBA	Dean's Prize presentations	Refer to subject guide for details, website for dates and presentation schedule – you may be invited to present or you may choose to attend

Capstone Project Timeline

For students enrolling in 48026 in Spring 2017
(Continuation from 48016 in Autumn 2017

Week	Activity/Task	Important notes
	Add 48026 to your UTS enrolment – this is not automatic, you must do this yourself	
Week 1	Students with satisfactory progress reports continue work on project, meet regularly with supervisor	
Week 2 Monday 31-07-2017	**For students who failed 48026 in a previous session or who have discontinued enrolment between 48016 to 48026**; prepare an updated written proposal (as per 48016) and submit it to your supervisor for review. You should obtain feedback from your supervisor, revise your proposal. Have your final version signed-off by your supervisor using the Capstone Proposal assessment form.	Examples of discontinued enrolments may include: unexpected requirement to travel abroad for work; unexpected personal matters. All breaks in enrolment from 48016 to 48026 must be supported by the project supervisor and then approved by the capstone project subject coordinator. For students repeating 48026, there may only be minimal change from the updated proposal submitted with your 48016 Progress Report. Your timeline (at least) will need updating.
Week 3 Monday 07-08-2017	Last day to add Capstone Project to your enrolment	
Week 4 Friday 18-08-2017	Submit revised proposal, Capstone Proposal assessment form, Appendix B and updated EHS Risk Assessment form (all signed by supervisor) to FEIT Dropbox 888 outside FLP CB11.05.300	**This is only for students who failed 48026 in a previous session or who have discontinued enrolment between 48016 to 48026.**
Week 5 Friday 25-08-2017	Census Date	Last day to withdraw from subjects without academic and financial penalty
Weeks 5-10	Work on project, meet regularly with supervisor	If necessary project proposal re-negotiated
Week 10 Friday 06-10-2017	Draft capstone report and demonstrate prototype to supervisor. Decide whether a D or HD grade is a possibility, prepare draft abstract	D/H grades must be supported by your supervisor. Your supervisor will need to confirm an assessor and include them on your abstract
Final Stuvac Week Friday 27-10-2017	Potential D/HD grade projects submit 250-300 word abstract	Refer to Capstone pages on UTSOnline for submission details This is a compulsory requirement for D/HD grade projects
1st week of Final Assessment period Friday 03-11-2017	Submit your Final Report in PDF format to UTS Online – turn-it-in submission link and a filled in Appendix B (Capstone Assessment Form) directly to your supervisor	Refer to Appendix E for details
2nd week of Final Assessment period Thursday 09-11-2017 Friday 10-11-2017	Capstone Project Presentation Day, includes poster presentation	Refer to subject guide for details and capstone webpage for presentation schedule
Thursday 30-11-2017	Dean's Prize presentations	Refer to subject guide for details, website for dates and presentation schedule – you may be invited to present or you may choose to attend

4.3   Intellectual property and confidentiality

All projects will have some intellectual property; however, for most projects the economic value of this will be negligible. For a small number of projects intellectual property may be an issue because you, your employer, and/or your supervisor may seek ownership to some or all of the intellectual property associated with your project. For these projects, an intellectual property agreement and/or confidentially agreement is suggested. This must be signed by all relevant parties and a copy provided to the Subject Coordinator.

To assist, UTS: Legal has prepared a **Confidentiality Deed Pole template** which is available from the subject coordinator on request. Email FEITCapstone@uts.edu.au briefly outlining the pertinent facts: likely signatories, type of IP and owner, who is requesting the agreement, other information. For example - Signatories: workplace supervisor, UTS supervisor, UTS student; IP: database of names and data or in-house IP…; Requested by: my workplace (please name the company); Other: we may need to discuss security of final report in the future as well.

If your company wishes to have the results of your work kept confidential, your final report can be kept secure for up to 3 years.

Further information on the UTS Intellectual Property policy is available at
http://www.gsu.uts.edu.au/policies/intellectualproperty.html

4.4   Academic Misconduct

Students are referred to the University Rules regarding Academic Misconduct, including Cheating and Plagiarism.

4.5   Human Research Ethics Committee (HREC)

Students are referred to the University HREC Policies:
http://www.gsu.uts.edu.au/policies/hrecguide.html

4.6   Use of laboratories

In principle a student may have the use of laboratory areas in the Faculty, but permission must first be obtained from the relevant Laboratory Supervisor. This is a formal procedure. It is not a casual procedure of just bumping into an academic or support staff member in the corridor. The resources are limited and these limited resources need to be controlled and managed.

Students must be formally accredited via the induction program, and this is carried out by the relevant Lab Supervisor. Refer to your supervisor for a copy of the induction program, or ask the Lab Supervisor. Importantly, the induction program includes UTS EHS Risk Assessment and Management procedures, and Safe Work Method Statements which you will need to discuss with the Lab Supervisor, as well as your capstone project supervisor.

On completion of the induction program, your supervisor may arrange access to particular labs.

Students are expected to do their own fabrication. Request for special workshop or laboratory services will be limited to special cases where skilled craftsmanship or special facilities are required. Technical staff assistance will normally be limited to the maintenance or explanation of laboratory equipment.

Students are also expected to furnish all small hand tools that they will require for use on their project. Some large tools and certain specialised hand tools may be available for loan through your supervisor. Some basic test and measurement equipment can be made available for use during normal operating hours.

Equipment must not be removed from its location without the permission of the Lab Supervisor. If the equipment is to be used outside the Faculty you will need to seek permission with sufficient advanced notice. The necessary insurance cover may be arranged at the request of the academic supervisor. You will be asked to sign a form acknowledging receipt of the equipment and specifying the date it is to be returned.

4.7   Faculty support for Projects

The FEIT Technical Services Group offers a variety of services which may be beneficial to your Capstone.

On Demand Virtual Labs (http://odvlab.eng.uts.edu.au)

> ODVLab provides you with a hosted self-managed computer environment with administrative access for experimentation and development accessible over the Internet. One or more hosted virtual machines running Linux, OpenSolaris, *BSD or Windows can be provisioned for your use.

Develop dot Eng (http://develop.eng.uts.edu.au)

> A Version Control repository (Subversion) and a wiki and issue tracking system (Trac) is available for software development projects. These repositories are useful for any project involving code development or for collaboration projects. These projects are backed up nightly (Weekdays). Repositories can be requested by going to http://develop.eng.uts.edu.au and requesting a new project.

High Performance Computing Cluster (http://cluster.eng.uts.edu.au)

> The High Performance Computing Linux Cluster provides a high performance computing resource for all researchers within FEIT. A variety of software packages (e.g. Matlab, Ansys or CFD-ACE) are available for use within the cluster, consult https://cluster.eng.uts.edu.au/cluster/pages/about%3Asoftware for a full list of software. Capstone students can use up to 4 computing nodes at any one time. Accounts can be requested by going to:
> https://cluster.eng.uts.edu.au/cluster/clusters/message/accountrequest

Funding

In general, there are no Faculty funds available for Capstone Projects.

However, some staff can provide funding support for their own research area projects. In these instances, all expenditure/costs will be controlled by your supervisor, or member of staff nominated by them, and the Faculty will retain the outcomes of the project work.

Other resources, such as the Faculty photocopy machines, laser printers are not available for reproducing your report. Phones in laboratories may be available at the discretion of the relevant laboratory manager and there use should be restricted to making internal calls and receiving external calls only.

4.8 Doing a Project at Work

If your Capstone Project is based on a project whose purpose is to primarily serve the interests of another entity (e.g. person or organisation), such as a workplace project, you must carefully distinguish between your Capstone Project and the other entity's project. The purposes, scope, imperatives, timeline, performance, quality and reporting requirements and criteria, etc. of each are quite distinct. Satisfactory performance on one will not necessarily guarantee satisfactory performance on the other.

The expectations of you on your performance on your Capstone Project are stated in the aims, objectives, and graduate attributes on page 1 of this Student Guide. In addition to those differences nominated above there are other obvious differences e.g. the requirement to submit a Capstone Project Report and, if you are a Distinction or High Distinction nomination, present your project orally. Less obvious differences may be:

- The necessity to identify and make visible why the project is worthwhile to society; e.g. who are the stakeholders; who is advantaged; who is disadvantaged; what are the criteria by which benefits and 'costs' (not just financial, but also e.g. social and environmental) and 'success' are to be determined; how are short- and long-term considerations affected?

- The extent of your delegation e.g. the extent to which you are individually responsible for the definition, planning, monitoring, control, design, implementation, verification, validation, and documentation of the project.

- The extent to which you work autonomously or are supervised on the project, and how closely supervised.

- Identification of the knowledge and skills you have applied on the project.

- Identification of the competencies you have developed through the project.

- You are also expected to demonstrate maturity, information literacy, problem-posing and –solving, and academic literacy, in addition to technical expertise and management skills.

If your project is undertaken at a location outside the University, then you should supply details regarding an external co-supervisor who will be overseeing your work. Your project proposal should accompany a letter of support on a company letterhead and signed by your external co-supervisor. A UTS EHS Risk Assessment must also be completed.

There will be initial liaison between your UTS supervisor and external co-supervisor to arrive at an acceptable mode of operation that ensures your work is properly credited and other assistance is well-defined. The external co-supervisor will normally be expected to attend your seminar if there is one, and be involved in the assessment in an advisory role. The UTS supervisor may visit your project site at appropriate time(s) to assess the context of the project and to liaise with your external co-supervisor.

For an on-going work-related project, the Subject Coordinator and UTS supervisor must be satisfied that the proposed project has sufficient elements of definition, contextual analysis and specification to allow opportunity for full and fair assessment of your performance on an Engineering task. This requires mechanisms to be in place which allow your contribution to the project to be visible and traceable and clearly distinguished from the contributions of others in your work place.

4.9   Indemnity, insurance and EHS matters

There may be opportunities for you to undertake your capstone project in a workplace other than UTS. **If you are not an employee of the company responsible for the workplace**, you may not be covered by their insurance cover (in case something happens to you). Further, you may not have indemnity cover (in case something you do causes damage or injury).

… you may not be covered by their insurance …

You should contact the capstone project subject coordinator before you go on-site.

… you may not have indemnity cover…

Further, in these cases the EHS information and training should be provided by both the UTS project supervisor and the external supervisor. The UTS supervisor must:

… contact the capstone project subject coordinator before you go on-site

- provide EHS information/training about any aspect of the work that is within that supervisors control;

the EHS information and training should be provided by both the UTS project supervisor and the external supervisor

- Be assured that the external supervisor has adequate EHS management system in place before sending the student to the external workplace. This can be done by requesting evidence that demonstrates the external supervisor/organisation has adequate systems (eg. information, training, consultation, risk management, records) or ask for a declaration that this is the case. The extent that you would go to would be commensurate with the risk. Copies of this documentation must be forwarded to the Capstone Project Subject Coordinator.

… adequate EHS management system in place before sending the student to the external workplace.

Additional information is available from the Capstone Project Subject Coordinator.

4.10   Adding value

Your final report will be a valuable addition to your portfolio of achievements that you will want to table at employment interviews. You can get even more value from your efforts by writing up your work as a paper and submitting as an entry in one of the many student paper competitions run by the various professional bodies. Check out their websites. The better students are encouraged to approach their supervisor and suggest developing the project material into a co-author publication for publication at a conference or within a Journal. Students of distinction in this subject are eligible for prizes and other accolades.

… suggest developing the project material into a co-author publication for publication…

5 Requirements for Undertaking Group Projects

5.1 Preliminary

These requirements apply when two or more students are working on a project.

Some advantages of the Group Project:
- the project can be more complex and demanding;
- allows for debate and discussion of process and substance;
- enriches learning through discussion and group synthesis of knowledge;
- provides opportunities to develop team leadership skills.

Some disadvantages of the Group Project:
- maintaining an equitable distribution of tasks/activities between group members;
- resolution of process related problems/issues as they arise;
- inherent dependency on other group members;
- tendency for tasks/activities to degrade into 'hand-holding' (e.g. two people claiming contribution for work which requires only one person to complete);
- maintaining fair and equitable assessment across the student cohort.

Further, there is an expectation (by the accrediting body for UTS: Engineering courses - Engineers Australia) that:

> *A Stage 1 graduate should have undertaken and completed two or more construction projects, at least one investigative project and at least one major design project. **At least one substantial project should be conducted individually**, and at least one as part of a team. Accredited degree programs should provide and require such project work for all students.*

Students should be aware that the assessments awarded to individuals may vary greatly within one group, even to the point where some students may not pass while others achieve distinctions. Each student will be individually assessed on their performance as a professional in the field.

5.2 Group Structure and Division of Work

Each group must document and implement a management structure. Group leadership roles must be clearly identified including who has responsibility for monitoring project deliverables and group coordination. This role could be shared amongst group members at various times during project. It must be noted that the leaders' management skills often determine the degree of success of the project.

A group project may be interdisciplinary, with students enrolled in different engineering degrees, or in Engineering plus other faculties such as computing science, industrial design, or business studies.

Before commencing the project there must be an agreement amongst all persons involved as to the division of tasks within the project. This agreement will form an integral part of the project proposal as well as part of the final report itself. Appropriate contingency plans must be considered.

5.3 Registration forms, Proposals, Progress Reports, Final Report

Because students will be individually assessed on their performance, each student must submit separate documentation – i.e. Individual Registration Forms; separate Project proposals which clearly identify those aspects of the project which are the students responsibility, and those which are shared responsibilities; separate Progress reports (for students enrolled in 48016); and separate individual final reports which should include references to the other group members project work where appropriate.

5.4 Supervision

Each student in a group project must have the same supervision. Different supervisors for different students are not acceptable. It is recognized that some projects have a complexity, or are interfaculty, so they may require more than one academic supervisor.

5.5 Contingency planning

A group project gives the opportunity for a major project to be undertaken, but there is the significant disadvantage that poorly performing members of the group can adversely affect the grades achieved by the other members. Poor performance can be the result of the demands of work, family or illness, and the possibility must be considered when proposing such a project.

In the event of a group member withdrawing, it is the responsibility of the remaining group member(s) to negotiate/redefine project outcomes with the supervisor. The project should be set-up from the start with this contingency plan in place so as not to adversely impact individual students.

5.6 Assessment principles for individual contributions

It is necessary to effectively assess the professional contribution of each person in the group. These guidelines provide additional criteria for evaluating individual contributions in group projects.

The body of the report will clearly indicate the work attributed to other group members where applicable. As a guide, this should be clearly identified in the Introduction chapter, as well as reiterated in the opening introduction section to each subsequent chapter.

Included in the student's report will be a personal reflection of at least 1500 words in length, addressing the following:
- The particular contribution of the student, in detail;
- How the group was structured and managed;
- The greatest technical challenge solved by the student;
- The greatest management challenge faced by the group;
- Lessons learned in how to complete a group project to time and specification;
- An estimate of the relative contribution to the overall project by each group member; and
- Timesheets showing all hours spent on the subject and the task done in those hours.

Students should make references to published material (journal articles, subject reading material from core subjects, text books etc.) when writing their reflection.

In the situation where one or more of the students in the group are to be considered D/HD candidates, these students are required to make an individual – stand-alone – presentation of their contributions to the project. This includes individual poster presentations and separate question times for each student following their presentation. In most cases, the presentations will be scheduled one after the other, but this may not always be possible. **For reasons of equity in assessment, this subject requirement will be strictly enforced by the subject coordinator.** Failure to adhere will result in the student work not be considered for D/HD grades.

As noted above: Students should be aware that the assessments awarded to individuals may vary greatly within one group, even to the point where some students may not pass while others achieve distinctions. Each student will be individually assessed on their performance as a near graduate in the field.

6 Capstone Project is … a very special subject.

Capstone Project is a very special subject, quite unlike any that you will have done previously.

This is the first sentence in this subject guide, and is repeated here again as a reminder about the diversity of the subject. For example, around 500 students complete the capstone project subject each year, with over 100 different supervisors, some in overseas institutions, working on a wide range of project topics – the best of which compete on a national level in thesis competitions, or present at international conferences. Hence, it's quite likely that you will believe yours is a very special project within this context, and have expectations about your particular circumstances.

Because of this diversity, it is sometimes difficult for a document such as this subject guide to accommodate the range of needs, or flexibility, that you feel is appropriate to your project or situation. Occasionally, this places all stakeholders in difficult positions. The guiding principle is to make decisions at a professional level, to perform as if you were already a graduate engineer.

For a range of reasons, there is a requirement for this student guide to provide a benchmark or level playing field that everyone can refer to, and adhere to. For this reason, the material presented in this student guide, or announcements posted on the capstone webpages, will provide the precedence when required. So, if you are in any doubt about a particular requirement, look for confirmation in writing – either in this guide, or the webpages.

Further, here are two examples that include both ethical and equity related issues. They are intended as 'food for thought' – many other scenarios could be developed. To assist, we've translated the situation from the university capstone project context into a workplace context for comparison, and included a number of stakeholders. The question becomes: as a graduate engineer, what would your response be if you were (either) the capstone project subject coordinator or workplace employer in the following situations?

UTS Capstone Project Context	Workplace Context
A capstone project supervisor advises a pair of students they only require a single project proposal and single project report. The students are aware of the requirements for individual proposals and reports for their group project, but choose to ignore this requirement and submit a single document because their supervisor advised them differently.	While on site, a client of your company advises one of your staff to install a cheaper alternative component to the one you, and Standards Australia, specified. Your staff member is fully aware of this dilemma, and the implications for workplace safety and your company. But they choose to ignore this and install the cheaper solution because the client advised them to.
A capstone project student has enrolled in 12cp one session project, has seen their supervisor just a couple of times, and writes to them at the end of the session seeking an extension of time. They claim their workload in other subjects was too great, and as they 'want to do a good job on their project', they don't want to delay their graduation.	You ask one of your staff to prepare the tender for a contract worth around $13k (arguably around the same value as a 12cp capstone project). They consistently fail to meet milestones throughout the 6 months, and miss the tender closing date. With little or nothing to show, you have to make a recommendation for their continued employment.

7   Appendices

APPENDIX A: **Capstone Registration Form- Online**

APPENDIX B: **Capstone Assessment Form**

APPENDIX C: **Capstone Proposal**

APPENDIX D: **Capstone Progress Report**

APPENDIX E: **Capstone Final Report**

APPENDIX F: **Poster Presentation**

APPENDIX G: **Evaluation Criteria for Prizes**

APPENDIX H :   **EHS Risk Assessment**

7.1 Appendix A: Capstone Registration Form- Online

Complete your Capstone Registration Form (Appendix A) online via clicking on the "Registration form" link found under Enrolment procedure at
www.uts.edu.au/current-students/feit/undergraduate/capstone-project

Enrolment procedure

You should start planning your Capstone Project in the session prior to enrolment. The enrolment process consists of the following steps:

1. Find a **topic and supervisor**
2. Complete the online **registration form**
3. If you have not already done so, enrol in the appropriate Project subject(s) via **My Student Admin**.

Capstone library and abstracts

It is possible to view previous students' Capstone Projects at the **FEIT Learning Precinct**.

Abstracts of Distinction and High Distinction Projects from previous sessions:

- **Spring 2016**
- **Autumn 2016**
- **Spring 2015**
- **Autumn 2015**

Contacts

Enquiries regarding the Capstone Project may be sent to **FEITCapstone@uts.edu.au**.

UNIVERSITY OF TECHNOLOGY SYDNEY — UTS: FEIT Student Intranet

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> Home   > Course   > Research   > Support and Services   > Extra Curricular   > IT Services
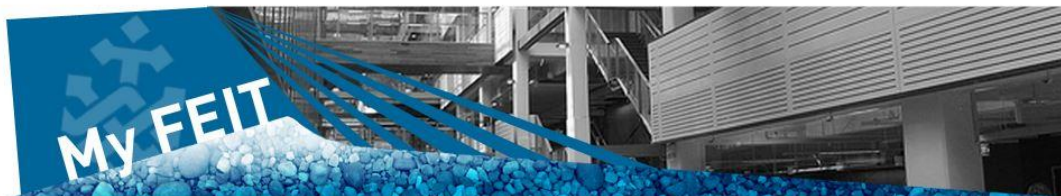
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Project Registration

If you encounter any errors submitting your form please submit a Bug Report.

Project Type Selection

Please select the Project Type, study plan and number of credit points you wish to undertake, then select the project name. Only project subjects allowed by your enrolled course and major will be shown.

- Project Type   [Capstone ▼]
- Number of Semesters   [2 ▼]
- Credit Points   [--any-- ▼]

Subject/Semester Selection

Project Name   [Select Project... ▼]

Online Registration Form

7.2   Appendix B: Capstone Assessment Form

Overview

Table 1 below shows 21 indicators adopted from the *Engineers Australia Australian Engineering Stage 1 Competency Standards.*

The Competency Standards are divided into three **Units**: (PE1) Knowledge Base, (PE2) Engineering Application Ability, and (PE3) Professional and Personal Attributes. Each Unit has **Indicators** numbered PE1.1, PE1.2, PE1.3 etc.

In Capstone Project, you are required to identify a subset of Indicators that will assist you to focus the development of your project proposal, as well as be applied in the assessment of your completed project. This includes choosing a number of indicators from each unit.

For example,

1.   (PE1) Knowledge Base, choose 3 out of the 5 Indicators

2.   (PE2) Engineering Application Ability, choose 5 out of the 11 Indicators

3.   (PE3) Professional and Personal Attributes choose 3 out of the 6 Indicators

It is the responsibility of each student to decide which indicators they wish to consider/address, however, you may wish to consult your supervisor. You should identify your chosen indicators by putting an **[X]** in table 1.

In this way, your project focus areas and the assessment of them will most likely be a unique combination of indicators; as unique as your capstone project.

The nature of a project is such that changes occur; perhaps subtle changes in intended outcomes or methodologies. To accommodate these variations, you may change your choice options to better reflect the project pathway you intend to pursue. However, **your final set of assessment indicators must be finalised by week 12 of the session in which you complete your project**.

Instructions for using Table 1 in preparing your Proposal

Read through all of the indicators listed in Table 1 – determine your choice indicators by considering carefully how you believe you will be able to deliver/demonstrate this competency by the end of your project.

Use the *Appendix B Assessment Template* provided to list each of the indicators in the first column. In developing your proposal, identify the tasks and activities you will undertake as part of your project work which will address each of the indicators. Your supervisor may be able to assist you to align your strengths/skills/attributes and your project aspirations to indicators.

Agree on a final subset of indicators, and include these in your Proposal documentation. You should also complete a self-evaluation of the applicability of each indicator to your project. That is – can you identify/predict before the project begins how/where particular indicators will be applicable. **Use a simple scale – such as '0' for not applicable (obviously there should be <u>none</u> which you choose that are not applicable) up to a '5' for indicators which you consider will be critical in your project work.**

Table 1: Indicators adopted from
Engineers Australia Australian Engineering Stage 1 Competency Standards.

It is recommended to use this form to assess your capstone project against all 22 indicators. Use the results of this initial assessment to choose 3 indicators from PE1, 5 indicators from PE2 and 3 indicators from PE3.

	PE1	KNOWLEDGE BASE	Chosen Criteria
Choose 3 indicators from PE1	PE1.1	Demonstrated use of sound knowledge of the engineering discipline at a phenomenological level, mathematics, natural and/or physical sciences for systematic investigation, interpretation analysis and solution of complex problems of engineering practice	[ ]
	PE1.2	Advanced knowledge in a technical area in the student's engineering discipline to a level that requires conceptual understanding of mathematics, numerical analysis, statistics, and computer and information sciences related to investigation, analysis, interpretation, assessment characterisation, prediction, evaluation, modelling, decision making, measurement, evaluation, and knowledge management techniques pertinent to the engineering discipline.	[ ]
	PE1.3	Demonstrated in depth understanding and ability to develop mathematical and/or physical models to use for analysis and design	[ ]
	PE1.4	Demonstrated ability to identify and critically appraise current developments, advanced technologies, emerging issues and interdisciplinary linkages , and to interpret and apply selected research literature to inform engineering applications in student's engineering discipline.	[ ]
	PE1.5	Demonstrated knowledge of materials and resources relevant to a student's discipline and the ability to select the most appropriate materials and techniques to meet a particular objective.	[ ]

	PE2	ENGINEERING APPLICATION ABILITY	Chosen Criteria
Choose 5 indicators from PE2	PE2.1	Demonstrated ability to identify the nature of a technical problem, make appropriate simplifying assumptions, achieve a solution, and quantify the significance of the assumptions to the reliability of the solution	[ ]
	PE2.2	Demonstrated ability to investigate a situation or the behaviour of a system and ascertain the relevant causes and effects	[ ]
	PE2.3	Demonstrated ability to address issues and problems that have no obvious solution, involving uncertainty, imprecise information, conflicting factors and require originality in analysis	[ ]
	PE2.4	Demonstrated appreciation of the interactions between technical systems, safety sustainability and the social, cultural, environmental, economic and political context in which they operate, and the relationships between these factors.	[ ]
	PE2.5	Demonstrated ability comprehend, analyse and quantify the nature of risk, both of a technical kind and in relation to clients, users, the community and the environment and devise strategies for managing this risk	[ ]
	PE2.6	Demonstrated ability to utilise a systems-engineering or equivalent disciplined, holistic approach to incorporate all considerations	[ ]
	PE2.7	Demonstrated ability to partition a problem, process or system into manageable elements, for purposes of analysis or design; and of re-combining these to form the whole, with the integrity and performance of the overall system as the paramount consideration	[ ]
	PE2.8	Demonstrated ability to conceptualise and define possible alternative engineering approaches and evaluate their advantages and disadvantages in terms of functionality, cost, sustainability and all other factors to deliver an optimal approach and defend the selection.	[ ]
	PE2.9	Understanding of the need to incorporate cost considerations throughout the design and execution of a project and to manage within realistic constraints of time and budget.	[ ]
	PE2.10	Demonstrated ability to consider the commercial, financial, and marketing aspects of an engineering project	[ ]

	PE2.11	Demonstrated proficiency in employing technical knowledge, design methodology, and appropriate tools and resources to design components, systems or processes to meet specified performance criteria	[ ]

	PE3	**PROFESSIONAL AND PERSONAL ATTRIBUTES**	**Chosen Criteria**
Choose 3 indicators from PE3	PE3.1	Demonstrated effectiveness in discussion and negotiation and in presenting arguments clearly and concisely in both oral and written communication (including clear diagrams and engineering sketches or drawings)	[ ]
	PE3.2	Demonstrated ability to locate, catalogue and use relevant information , including proficiency in accessing , systematically searching, analysing and evaluating relevant publications	[ ]
	PE3.3	Demonstrated ability to apply creative approaches to identify and develop alternative concepts and procedures and identify opportunities for improvement.	[ ]
	PE3.4	Demonstrated intellectual rigour and an ability to recognise limits to ones knowledge and seek advice, or undertake research, to supplement it	[ ]
	PE3.5	Demonstrated awareness of legislation, statutory requirements standards and codes of practice relevant to your project	[ ]

Instructions for using Table 2 in preparing your Progress Report and Final Assessment

Once you have finalised your indicators for either your progress report assessment or final project assessment, you will need to use Table 2 '*Descriptors for Assessing Indicators*' listed below to complete a self assessment of your work. The descriptors applied here are identical to the descriptors for (H)igh Distinction, (D)istinction, (C)redit, (P)ass, and (Z) Fail grades awarded in UTS subjects – so they should be well known to you, and your supervisor.

Table 2: Descriptors for assessing indicators – based on descriptions for UTS grades of H, D, C, P, Z

Indicator Score	Descriptors for UTS grades
5	Work of *outstanding quality* as for 4, but superior – at a standard worthy of publication
4	Work is of *superior quality*, including a capacity to demonstrate a competency/indicator at a level well above what is expected from late stage UG coursework; demonstrates learning at a superior level
3	Work is of *good quality* demonstration of a competency / indicator at a level higher than what is expected from late stage UG coursework AND presents a clear rationale / critique / discussion for the appropriateness / validity of the technique or tool or methodology used / applied
2	Work is *satisfactory* demonstration of a competency / indicator at a level equivalent to what is expected from a late stage UG coursework. Note, in capstone projects – we should have expectations that students are delivering at a level greater than 2 out of 5!
1	Work is *less than satisfactory* demonstration not sufficient to demonstrate competency / indicator at level expected from late stage UG coursework material, or perhaps satisfactory demonstration of only early stage foundation level engineering science material
0	This Indicator is not applicable to or not demonstrated in the capstone

Instructions for using Table 3 and Table 4 in preparing the Final Assessment

Table 3 lists evaluation criteria which considers the overall (holistic) aspects of the project rather than specific components assessed by the indicators. Your supervisor/assessor will use this, as well as Table 4 in determining your overall recommended project mark/grade. Again, table 2 '*Descriptors for Assessing Indicators*' listed above are used to score each evaluation question out of 5.

Table 4 provides a guide showing how assessment (out of 5) of your chosen indicators (from Table 1) are combined with the overall evaluation (Table 3) to provide a recommended grade for your project. You supervisor and/or assessor will use Table 4 to confirm a final mark/grade for your project.

Table 3: Overall Project Evaluation Criteria

	Evaluation question	Supervisor/ Assessor evaluation
Content	Does the candidate clearly identify a question to be answered or problem to be solved?	0 1 2 3 4 5
	Does the candidate present the results of the project in a succinct and cogent form, with suitable illustration where appropriate?	0 1 2 3 4 5
	Does the candidate demonstrate significant engineering judgement at a level that would be reasonably expected from a recent engineering graduate?	0 1 2 3 4 5
	Is the content sufficiently substantial and broad ranging to allow coverage of the chosen assessment indicators?	0 1 2 3 4 5
	Does the report contain sufficient material suitable for publication? **H (5):** Peer Reviewed Conference Paper **D (4):** Editor Reviewed Conference Paper (IEEE standard) **C (3):** Engineering Paper / Seminar for graduate audience **P (2):** Engineering application note (provide graduate engineers to help them to learn about / gain an appreciation of subject material.	0 1 2 3 4 5
Knowledge / Ability	Does the candidate exhibit sufficient knowledge of the research topic and familiarity with the discipline it embraces for a final report at this level?	0 1 2 3 4 5
	Does the candidate demonstrate a capacity for clear thinking?	0 1 2 3 4 5
	Does the candidate demonstrate significant techniques of analysis and/or evaluation as outlined in the chosen assessment indicators?	0 1 2 3 4 5
	Has the candidate demonstrated an understanding of project management techniques and applied them effectively in their capstone project.	0 1 2 3 4 5
	Has the candidate demonstrated an ability to manage their own time and processes effectively, prioritising competing demands to achieve the required goals and objectives	0 1 2 3 4 5
Presentation	Does the work represent a well planned approach to the subject matter?	0 1 2 3 4 5
	Is the report structured appropriately?	0 1 2 3 4 5
	Does the candidate appropriately orient the reader to the ground to be covered and the arguments made?	0 1 2 3 4 5
	Is the presentation of the report, in matters of grammar, spelling, punctuation and general appearance, adequate?	0 1 2 3 4 5

Table 4: Combining assessment and evaluation criteria to recommend a mark/grade.

Chosen assessment indicators requirement		Overall evaluation criteria requirements	Final Mark/Grade
A total of: **3 × 5's in PE1** Knowledge Base, and **5 × 5's in PE2** Engineering Ability, and **3 × 5's in PE3** Professional Attributes	**AND**	Work demonstrating **outstanding quality in ALL** Evaluation Questions (ie: 5's in all questions in Table 3)	High Distinction [85, 90, 100]
At least: **1 × 5's in PE1** Knowledge Base, and **1 × 5's in PE2** Engineering Ability, and **1 × 5's in PE3** Professional Attributes, and the **remaining indicators should be 4's**	**AND**	Work demonstrating **superior quality in ALL** Evaluation Questions (ie: 4's or 5's in all questions in Table 3)	Distinction [75, 80]
4's in at least 7 of the 11 chosen indicators	**AND**	work demonstrating good quality showing **more than satisfactory achievement in ALL** evaluation criteria (ie: 4's in at least 8 of the 14 questions in Table 3)	Credit [65,70]
At least 3's in ALL chosen indicators	**AND**	work demonstrating **satisfactory achievement in ALL** evaluation criteria (ie: at least 3's in all questions in Table 3)	Pass [50, 55, 60]
2's in any of the chosen indicators	**OR**	work **demonstrating unsatisfactory achievement in ONE or more** of the evaluation criteria (ie. 2's in any of the questions in Table 3)	Fail [less than 50]

Appendix B: Capstone Assessment Form

FACULTY COPY

Project Number:		Supervisor:	
Student Name		Project Title	
Student No.		Major (eg. civil eng)	
Subject No.	48006 / 48016 / 48012 / 48026	External supervisor:	

Preparing your Assessment Form

Proposal: Use this template to prepare your indicator assessment form. You should download this template and cut and paste the relevant indicator descriptions into the table. You should use a different font or italics to highlight this text. On a new line, add sufficient detail to as needed; **no more than 50 words per indicator**. In preparing to undertake your project, **identify how or where or when this indicator is applicable to the project work you will undertake, include cross-references to relevant sections and/or page numbers in your proposal.** Use a simple scale – such as '0' for not applicable (obviously there should be none which you choose that are not applicable) up to a '5' for indicators which you consider will be critical in your project work Next, use self-assess the extent to which you believe the indicator is applicable to your project.

You should then **print a copy, complete the details on the cover page and staple it to your Proposal assessment form**. This form will be used to facilitate feedback with your supervisor and assess your project proposal – this will give you confidence that what you intend to undertake is achievable. Your supervisor will also offer their evaluation for the indicators you have chosen.

Progress Report and Final Assessment: Use this template to document your assessment indicators. As above, you should download this template and use a different font to highlight the relevant indicator. On a new line, add sufficient detail to the softcopy as needed; **no more than 50 words per indicator.** In undertaking your project to-date, **identify exactly how or where or when you have delivered/demonstrated this indicator. Be clear and specific; include cross-references to relevant sections and/or page numbers in your report, quote actions/activity that you undertook and when.** Use Table 2 *Descriptors for assessing indicators* in Appendix B to self-assess the extent to which you believe you have been able to deliver/demonstrate each indicator.

You should then **print a copy, complete the details on the cover page and staple it to your Progress assessment form. If you are completing this form for final report assessment submit a copy directly to your supervisor**. The form will be used as feedback/review of your progress report or as a component of your final capstone project assessment.

You will have an opportunity to review your supervisor's assessment of your progress report. Typically, you will not have an opportunity to review your supervisor's assessment of your final capstone project report.

Student Self–Assessment Summary

Write your self-assessment (a score out of 55 as there are 11 indicators worth 5 each)

Student signature   Date

Supervisor / Assessor Assessment Summary

Write your self-assessment (a score out of 55 as there are 11 indicators worth 5 each)

Supervisor signature   Date

Assessor signature   Date

Capstone Project Assessment Template

Which of the following applies (circle as appropriate):

| | | Proposal Assessment | Progress Assessment | Final Assessment |

Indicator	**Proposal Assessment**: In preparing to undertake your project, identify how or where or when this (choice) indicator is applicable to the project work you will undertake. **Progress Report and Final Capstone Project Assessment**: In undertaking your project, identify how or where or when you have delivered/demonstrated this (choice) indicator	self assessment (out of 5) based on descriptors in table 2	supervisor and assessors assessment (out of 5) based on descriptors in table 2
PE1._		0 1 2 3 4 5	0 1 2 3 4 5
PE1. _		0 1 2 3 4 5	0 1 2 3 4 5
PE1. _		0 1 2 3 4 5	0 1 2 3 4 5
PE2. _		0 1 2 3 4 5	0 1 2 3 4 5
PE2. _		0 1 2 3 4 5	0 1 2 3 4 5
PE2. _		0 1 2 3 4 5	0 1 2 3 4 5
PE2. _		0 1 2 3 4 5	0 1 2 3 4 5
PE2. _		0 1 2 3 4 5	0 1 2 3 4 5
PE3. _		0 1 2 3 4 5	0 1 2 3 4 5
PE3. _		0 1 2 3 4 5	0 1 2 3 4 5
PE3. _		0 1 2 3 4 5	0 1 2 3 4 5
	total (out of 55)		

Additional assessment comments:

Example: Extract from Appendix B for a proposal submission.

Capstone Project Assessment Template

This has been highlighted to make it clear this appendix B is read in the context of a project proposal.

Which of the following applies (circle as appropriate):			
		Proposal Assessment ~~Progress Report Assessment~~ ~~Final Assessment~~	
Indicator	**Proposal Assessment**: In preparing to undertake your project, identify how or where or when this (choice) indicator is applicable to the project work you will undertake. **Progress Report and Final Capstone Project Assessment**: In undertaking your project, identify how or where or when you have delivered/demonstrated this (choice) indicator	self assessment (out of 5) based on descriptors in table	supervisor and assessors assessment (out of 5) based on
PE1.3	*Demonstrated ability to develop mathematical and/or physical models to use for analysis and design* The inverted pendulum control system will be modelled to produce a control system block diagram including values for system parameters. This mathematical model will then be used to develop a digital feedback control system capable of maintaining the 'pendulum' in the vertical position.	4	0 1 2 3 4 5
PE2.6	*Demonstrated ability to utilise a systems-engineering or equivalent disciplined, holistic approach to incorporate all considerations* In preparation for the experimental investigation: a draft specification based on discussions during previous session with supervisor will be further developed; a design considering cost and component availability constraints will be provided to the workshop for manufacture; electronics systems and sensors implemented; DAQ system and digital controller interface operation verified.	4	0 1 2 3 4 5
PE2.9	*Understanding of the need to incorporate cost considerations throughout the design and execution of a project and to manage within realistic constraints of time and budget.* A preliminary budget has been approved – to be finalised as quotes for major expense items are provided. The majority of small components are available ex-stock. Issue with supplier of PCB motors – may need further discussion and decision regarding long-term supply/availability of replacement parts. Need to schedule workshop activities ASAP – lead-time presently 3-4 weeks.	3	0 1 2 3 4 5

The description of indicator PE1.3 has been included and highlighted in italics

For the proposal, around 50 words outlining how or where or when the student believes/plans to address this indicator.

For the progress report and final report, the student needs to cross-reference sections of the reports to demonstrate clearly where this indicator is addressed.

This is the student's self-evaluation of this indicator. In the proposal stage it is used as a measure of the applicability or the perceived importance or amount of work this indicator may have over the duration of the project.

For the progress report and final report, this self assessment should be based on the description in Table 2.

7.3   Appendix C: Capstone Proposal

The Proposal is intended to be a detailed planning document for your capstone project. The effort that is invested in this proposal will most likely have a direct impact on the success and quality of your project.

You should read this appendix in conjunction with the Capstone Project Timeline for details of dates and times.

Your supervisor will want to discuss your project with you, identify approximate timelines and meeting dates over the period prior to the session starting. This is an ideal opportunity to discuss your Project Proposal.

By the end of week 1 of session, you'll need to have submitted a proposal to your supervisor for comment, including a draft Appendix B. During the following two weeks, your supervisor will discuss any changes, additional work required, and suggest a completion date for this work. You should also undertake a UTS EHS Risk Assessment for your project during this time.

After addressing all of the suggestions made by your supervisor, you should resubmit the Project Proposal and finalised Appendix B for assessment with a Capstone Proposal Assessment Form. You'll need to complete some of the details on the form before you give it to your supervisor.

By the end of week 4, your supervisor will complete their evaluation of your final Project Proposal and Appendix B, signed the assessment form and UTS EHS Risk Assessment Form, and returned it to you. You'll then submit the proposal, Appendix B, signed assessment form, UTS EHS Risk Assessment, and any Intellectual Property Agreement or Confidentiality Agreements to the Subject Coordinator.

Your proposal remains a living document and will be subject to changes over the course of your project. For example, your supervisor may ask to start meetings with an update of your project and contingency planning. In this regard, there will be no need for you to resubmit your proposal to the FEIT Drop box. However, if there are significant changes, your supervisor may request a rewritten proposal and Appendix B to better reflect your project work. Refer to the Documentation Control section for why this is important.

Students enrolled in 48016 Capstone A

For students undertaking 48016 Capstone Project A and 48026 Capstone Project B, your proposal and Appendix B will be submitted at the start of 48016, and then revised as part of your progress report submitted at the end of 48016. A separate proposal for 48026 is not required.

Guidelines for Developing a Project Proposal

The Proposal must include a **signed declaration of originality**. The standard UTS: Engineering Assignment Cover Sheet form is adequate.

The Proposal should contain sections which carefully address each of the following areas; obviously you should include relevant material throughout the proposal which will substantiate your Appendix B indicators:

A.   Project Title
1.   You need an appropriate project title, one that encompasses the nature of your body of work, without being too wordy or verbose.

B.   Project outline
1.   Give a brief qualitative description of your topic in plain English, and why it is of interest to you.
2.   Give a more precise statement of the project, using appropriate technical language by identifying what contributions your project can make to the engineering community in terms of scholarship, novel design, validation and verification of a method or model.

C.   Capabilities of the student
1.   You need to describe why you think you are suitable to undertake this project. Give a brief description of your track record in the area of the topic, and/or how you developed interest. An important aspect to be considered here will be your ability to complete the project on time.

D. **Objectives and Scope**

    1.   Describe:

        a)   the specific objectives of your project;

        b)   the need or value of this project, and to whom;

        c)   the viability of the project, as you seek to proceed with it

    2.   Identify what are key technical assumptions which require verification, how and to what extent you will be able to verify them.

    3.   Identify other non-technical assumptions on which your project is based - eg economic, social, cultural, the sources on which these assumptions are based, and how and to what extent you will be able to verify them.

E. **Method:**

    1.   You need to be able to state here the different stages of your project e.g. literature review, experimental investigation, data interpretation, etc.

F. **Strategies and resources**

    1.   State possible software requirements for undertaking this project. Explain why your choice of software is appropriate. State where or whether the software is accessible to you.

    2.   State any equipment, and any other laboratory facilities you will need for the project. Indicate -

        a)   where these pieces of equipment and facilities are available; if at UTS you should obtain a signature from the person who has responsibility for the equipment or facility that you intend to use.

        b)   any equipment or material which are not currently available, and need to be purchased – include names of suppliers and cost;

        c)   estimated use of the equipment pieces and facilities; and

        d)   what, if any, skills acquisition you will need to undertake in order to use the above resources; and

        e)   nature of any assistance required from laboratory staff, and estimated time.

    3.   State what, if any, are the data that you will need to obtain or generate, and their sources or methods of generation. Provide indication of the likelihood that the data can be obtained.

    4.   Give title, author, and publication details of at least **3 key references** you have identified as *academically accessible* and *appropriate* in supporting your project work; write a short paragraph on each of these references to describe what makes each of them accessible to you (eg who is the intended readership, what knowledge is assumed) and what is useful about them for the project. Refer section I below for guidelines on how to reference this material.

G. **Timeline**

    1.   Provide a realistic and detailed timeline for your project completion. Identify key tasks, activities, milestones. A Gannt Chart or equivalent is expected.

H. **Project Risk Assessment**

    1.   Identify a broad range of foreseeable risks associated with undertaking the project, and what contingency plans you propose to deal with them. This risk assessment is about those areas other than EHS (Environment Health and Safety) related which are detailed in the UTS EHS Risk Assessment form (download from UTS Online). This may include risk such as: procuring or availability of various equipment, parts, access to research data, competing demands from external sources such as workplace commitments, your supervisor's availability, even your own personal circumstances…

I.   References used in preparing this Project proposal

Provide a list of resources used in the preparation of this proposal using the guidelines below.

In order to develop an understanding of the published information which is available to support your research all students are required to undertake a search for information on their selected topic **before commencing work on their capstone project**. This will become part of the final report as a chapter or appendix.

Students must provide evidence of the resources they have used:

- by keeping a record of the sources they use;
- by noting the terms they use in searching each source – unsuccessful searches should also be noted;
- by maintaining a record of relevant references to books, journal articles and web sites, either in print or on disc; and
- by providing copies of the most relevant articles.

To avoid unnecessary work, all references should include the elements necessary to cite the work in your capstone project's bibliography:

Books:
- name (s) and initials of author(s)
- year of publication
- title of book (underlined or in italics)
- edition (if not the first)
- publisher and place of publication
- page numbers (if applicable)

Example: Allen, J.A. 1967, *Scientific innovation and industrial prosperity*, Elsevier, Amsterdam.

Journal Articles:
- name(s) and initials of author(s)
- year of publication
- title of article (in 'single inverted commas')
- title of journal (underlined or in italics), volume number, issue number, page numbers

Example: Amaldi, B.W. 1973, 'Proton increases at high energies', *Scientific American*, 229(5); 36-44.

Internet:
- name(s) and initials of author(s)
- date of publication
- title of work (in italics)
- publisher
- edition, if other than the first
- type of medium
- protocol and address and path
- date of message or visit

Example: Walker, J.R.1998, 'MLA-style citations of electronic sources',
Columbia guide to online style, http://www.columbia.edu/cu/cup/cgos/idx_basic.html (28 Feb. 2001)

The sources of information should include appropriate references from each of the following categories:
1. Books, which may include reference books
2. Journals, which may be in print or online
3. Web sites, which may include government or commercial web sites

Attach this signed form to
your proposal

FACULTY COPY
This form and documents identified on it
to be submitted to the FLP by the student

7.3.1 Proposal Assessment Form

Student to complete:

Project Number:	*(to be entered by UTS admin staff)*	Supervisor:	
Student Name		Project Title	
Student No.		Major	
Subject No.	48006 / 48012 / 48016 / ………..	External supervisor:	

Please outline here key assessment criteria for this project (other than those identified in Appendix B):

Supervisor to complete:

Has the student agreed to maintain a journal or log book? …………….………….………………… **Continued**
What is your planned frequency of contact with the student?.. **over …**
What is your planned frequency of contact with the external supervisor? ……………………………… **supervisor**
Will the student be working towards a potential D/H grade?.. **signature**
Additional comments: **required on**
this form

CHECKLIST: Student to complete   (* compulsory – must be ticked):

☐   * Supervisor's signature and evaluation recorded on this form
☐   * Project assessment form (Appendix B) completed by student and supervisor stapled to this form
☐   * UTS EHS Risk Assessment Form completed by student and supervisor stapled to this form
☐   * Copy of project proposal with statement of originality signed by student
☐   Copy of signed letter of support from external supervisor
☐   Copy of signed Intellectual Property or Confidentiality Agreement
☐   Other (please specify):

**ALL MATERIALS TO BE SUMBITTED TO FEIT DROP BOX 888 LOCATED OUTSIDE FEIT LEARNING
PRECINCT: CB11.05.300: ENCLOSED IN AN ENVELOPE WITH YOUR NAME, STUDENT NUMBER AND
SUPERVISORS NAME ON THE COVER**

Supervisor to complete using the Guidelines for Developing a Project Proposal for assessing each section:

Proposal requirement	Yes/No	Supervisor Notes/Comments *(if required)*
Appropriate Project title		
Project Outline		
Capabilities of Student		
Objectives and Scope		
Method		
Strategies and Resources		
Timeline		
Risk Assessment		
Assessment Criteria		
References used		

Additional comments:

Supervisor to indicate evaluation

All things considered, I believe this Project Proposal to be at the following level (circle one):
        unacceptable   pass   credit   distinction or high distinction

Supervisor:………………………………….…..... Signature:…………………………. Date:……………………

Additional notes regarding submission:

Stay up to date by regularly checking the capstone project web pages for the latest information

7.4 Appendix D: Capstone Progress Report

Capstone Project Progress Report

The Progress Report is intended to describe in adequate detail the progress made during the first session of your Capstone Project. It is a requirement for students enrolled in 48016 only. The process is similar to the Project Proposal procedure.

You should read this appendix in conjunction with the Capstone Project Timeline for details of dates and times.

Your supervisor may want to discuss your progress report with you in the last few weeks of the session. This is something you should initiate as an agenda item in your meetings or correspondence. Your supervisor will be unable to allocate sufficient time if you leave this task until the examination weeks – they are likely to be busy with subject marking as well as final report submissions from other capstone students.

Your progress report should include details of any changes to your proposal submitted at the beginning of the session, including an updated project plan. Refer to the Documentation Control section for why this is important, as well as the guidelines below.

Once completed, you should submit your Progress Report to your supervisor for assessment with your completed Appendix B and Capstone Progress Report Assessment Form. You'll need to complete some of the details on the form before you give it to your supervisor.

Your supervisor will then assess the report, complete their sections of Appendix B, sign the assessment form, and return them to you in time for you to submit them to the FLP by the end of the first week of assessment period (final report submission day).

Your supervisor can recommend a Q (Result Pending) grade is awarded if they believe you have demonstrated satisfactory progress. The Q grade will be changed pending the grade you receive for 48026 Capstone Project B in the following session. Enrolment in 48026 is not automatic, and you should check your enrolment in the usual manner.

Your supervisor will recommend a Z (fail) grade is awarded if they believe you have not demonstrated satisfactory progress, and you will have to re-enrol in Capstone A.

On time submission of a Capstone Progress Report Assessment Form and Appendix B and your Progress Report is a requirement of the subject. A Z (fail) grade may be awarded automatically by the Subject Coordinator where the student does not submit the progress report and assessment form by the deadline.

Guidelines for writing the Progress Report

The Progress Report must include a **signed declaration of originality**. The standard UTS:Engineering Assignment Cover Sheet form is adequate.

The Progress Report should contain two parts:

A.   Capstone A deliverables:
1. the goals which you set for the session;
2. comment on the progress in relation to the goals, work plans and any other achievements;
3. problems or issues which affected your progress and the strategies identified to overcome them (eg. Infrastructure/equipment, outside work commitments project funding);
4. A comprehensive review of the literature related to your project area which places your work in the broader body of knowledge;
5. Comment on the involvement of external or industry supervisors (where applicable);

B.   Capstone B planning:
1. Provide an updated version of your Project Proposal that will form the basis of your work for 48026 Capstone B. All sections identified in the Guidelines for writing a Project Proposal should be considered, although some may not have changed significantly (eg. Section I – Assessment Criteria).

Attach this signed form to
your progress report

FACULTY COPY
This form and documents identified on it
to be submitted to the FLP by the student

7.4.1 Progress Assessment Form

Student to complete:

Project Number:		Supervisor:	
Student Name		Project Title	
Student No.		Major	
Subject No.	48016 / ………..	External supervisor:	

Please outline here key assessment criteria for this project (other than those identified in Appendix B):

Supervisor to complete:
Has the student maintained a journal or log book? …………….…………………….……………….

What has been the frequency of contact with the student? ....

What has been the frequency of contact with the external supervisor? …………….…………………

Will the student be working towards a potential D/H grade? ....

Additional comments:

Continued over … supervisor signature required on this form

CHECKLIST: Student to complete   (* compulsory – must be ticked):

☐   * Supervisor's signature and evaluation recorded on this form
☐   * Project assessment form (Appendix B) competed by student and supervisor stapled to this form
☐   * Copy of progress report with statement of originality signed by student
☐   Other (please specify):

ALL MATERIALS TO BE SUMBITTED TO THE FLP: DROPBOX 888 ENCLOSED IN AN ENVELOPE WITH YOUR NAME, STUDENT NUMBER, PROJECT NUMBER AND SUPERVISORS NAME ON THE COVER

Supervisor to complete:

Proposal requirement	Yes/No	Supervisor Notes/Comments *(if required)*
Identified Goals:		
Report of progress made		
Report on problems and issues		
Report on involvement with Industry Partners		

Supervisor to complete using the Guidelines for Developing a Project Proposal:

Updated proposal		

Additional comments:

I recommend the student is awarded the following grade for 48016 Capstone Project A (please circle grade):
(Z) fail grade   or   (Q) satisfactory - result pending

Supervisor:…………………………….....Signature:………………………….…….Date:…………….

Additional notes regarding submission:

Stay up to date by regularly checking the capstone project web pages for the latest information

7.5 Appendix E: Capstone Final Report

The faculty only requires a soft copy submission. In some circumstances, your supervisor may request a spiral bound copy on final report submission day. Students are advised to confirm this requirement with their supervisors.

Document structure/layout

The final report body text size of the characters shall be 12 point in a serif font (such as Times New Roman); the line spacing shall be 1.5 spacing.

The number of pages in the report will depend to an extent on the nature of the work undertaken. Your supervisor will be able to offer relevant advice. As a guide you could expect to write a maximum of 100 pages for your report (not including appendices). A better guide is the number of hours you must dedicate to your project. For example, around 180hr for a passing grade 6cp or 360hr for a passing grade 12cp project would be typical.

Your final report must conform to the following structure. The first page will be a title page as shown in the example below.

University of Technology, Sydney
Faculty of Engineering and Information Technology

**APPLYING TECHNOLOGY TO PLANT MANTENANCE MANAGEMENT
STUDY SITE - THIESS MT OWEN MINE**

by

John Lucas Smith

Student Number: 10123456
Project Number A12-099
Major: Mechanical Engineering

Supervisor: Dr David Eager
Industry Co-supervisor: Mr Fred Brown (Thiess Bros Pty Ltd)

A 12 Credit Point Project submitted in partial fulfilment of the
requirement for the Degree of Bachelor of Engineering

26 July 2012

Example Format for Final Report Title page

The second page should be a signed Statement of Originality in which you declare that you are the sole author of the report, that you have not used fragments of text from other sources without proper acknowledgment, that theories, results and designs of others that you have incorporated into your report have been appropriately referenced and all sources of assistance have been acknowledged. If your Capstone extends work you undertook in (say) another subject then you must declare this and clearly identify the extent of this material in your report. The subject coordinator reserved the right to fail any student who does not sign a statement of originality.

The third page of the report must contain an abstract of the work, of not more than 300 words. It should first give the project title, your name and the session. It must then describe the problem giving rise to the project, the method adopted by the student to solve it, the resulting achievements and their significance to the field of study.

The fourth page may be an Acknowledgment page making specific reference to the sources of help, in material or human terms, which you have valued during the course of the work.

The next pages should include the **Contents, List of Figures, and List of Tables** sections. These sections should include appropriate numbering right justified.

These pages should be followed by a **Nomenclature** section that lists symbols and abbreviations used in the text.

The remainder of the written report may be arranged in Chapters as follows:

Introduction: The problem is defined and the contents of each Chapter discussed briefly.

Literature Review: This Chapter includes the results of the literature survey on or related to the report topic (see References example below).

Two or three Chapters: These should appropriately describe, under suitable headings and subheadings, the main theory behind the work done, the experimental results, techniques and equipment used. In particular, aspects which demonstrate the quality of the work done should be emphasised (e.g. how problems were overcome, the theoretical model of the problem tackled).

Conclusion: Results are evaluated and recommendations for future work made.

References: Others works that have been used for information should be listed. They should be listed alphabetically by author. The Faculty uses the Harvard or author/date referencing style. UTS Library has a clear guide to this style at:

http://www.lib.uts.edu.au/students/discover-your-library/referencing-and-writing

The following is an example of references in a text and their associated bibliography in the Harvard style which was created using EndNote. EndNote is a bibliographic software program for managing references. Information about EndNote is available at http://www.lib.uts.edu.au/help/referencing/endnote

> Publicly funded research institutes in most countries have been pressed by economic (Tomkovick & Miller, 2000) and political pressures through the 1990s to become more financially independent (Porter, 1998), to be more accountable and to adopt more businesslike principles and practices. In this context, the occupational roles and career options for scientists and research managers in these organizations have undergone considerable change (Duta, 2000). As the research cultures of these institutions take on a more commercial perspective (Bell, 1999, p. 73), new and critical career path choices for both researchers and the organizations themselves have emerged. The changing occupational roles of research scientists and research managers in the Australian Commonwealth Scientific and Industrial Research Organization, one of the world's largest research organizations, are important examples of this phenomenon (Walker, 2001).

> **References**
> Bell, T. 1999, *Commercialisation of research cultures,* PhD Thesis, University of Technology, Sydney.
> Duta, M. 2000 'Management of technological innovation in a transition economy', In *IEEE International Engineering Management Conference 2000* IEEE, Piscataway, NJ, USA, pp. 236-238.
> Porter, M. E. 1998, *The competitive advantage of nations: with a new introduction,* Macmillan, London.
> Tomkovick, C. & Miller, C. 2000, 'Perspective - riding the wind: Managing new product development in an age of change', *Journal of Product Innovation Management,* vol. 17, no. 1, pp. 413-423.
> Walker, J. 2001, *Research management to-day,* http://www.uts.edu.au (17 August, 2001).

Appendices: Material of interest that would be a distraction if it was placed in the main text. The appendices may include details of design calculations, theoretical analysis and data sheets and so on.

Your report should not contain any material that cannot be justified as either contributing to your explanation of the problem that you are tackling or explaining the chosen solution.

Softcopy submissions to TURNITIN (UTS Online)

A PDF (portable document format) copy of the final version of the report must be submitted via UTS Online on the final report submission day. Results for this subject will be released after you submit a soft copy report which your supervisor will download and mark.

Requirements include:

- the file size of your final document should be less than 40MB and number of pages less than 400.

- the pdf document must not have any security or protection enabled; printing, changing, assembly, extraction, commenting, etc must all be permitted. Rationale: often we want to be able to print or extract or comment on material from these documents for other purposes (ongoing projects).

- the pdf must be created from the relevant application (eg. WORD) – it must not be a scanned image. Rationale: obviously we can't search for key terms in a scanned image.

- The pdf must include all material (including drawings, charts, appendices). Rationale: we want one complete document, not multiple files from various applications.

- In cases where confidentiality agreements are in place, you should contact the subject coordinator to verify submission of agreements and the confidential nature of the work.

- most applications should have no difficulty producing a PDF version of your submitted material (eg. word document, spreadsheet, CAD application, etc). You should **use the 'image-compress' feature** (especially with photographs and scanned images) to further reduce the size of the final pdf.

- **Acrobat Professional V9** can be used to collate the individual pdf documents together (very simple - start by opening your 'main' pdf and then use Documents /Pages / Insert to add other pdf's where you want them in the main file).

- please **do not lock or block or password protect** the pdf file

- your pdf should have the following **filename format**: <S15-xxx Final Report FamilyName>. For example: A10-321 Final Report Jarman

- we recommend you forward your supervisor a copy of the pdf submission so that they have a copy as well.

FACULTY COPY
This form has to be used by the
supervisor. Completed form to be returned
to Capstone Project Subject Coordinator
or Engagement team

7.5.1 *Capstone Final Report Assessment Form*

Project Number:		Supervisor:	
Student Name		Project Title	
Student No.		Major	
Subject No.	48006 / 48012 / 48026 / ………..	External supervisor:	

Please outline here key assessment criteria for this project (other than those identified in Appendix B):

Supervisor to complete:

Has the student maintained a journal or log book? ………………..……………………….…………….

What has been the frequency of contact with the student? ....

What has been the frequency of contact with the external supervisor? …………………..……………….

Additional comments:

Continued over … supervisor signature required on this form

CHECKLIST: Supervisor to download the report from UTS Online – Turnitin submissions and ensure that the following are complete

☐   A statement of originality signed by student is included in the report

☐   Project assessment form (Appendix B) has been completed by student and submitted to the supervisor

☐   Correspondence from subject coordinator approving extension of deadline is submitted (if applicable)

☐   Other (please specify):

THE SUPERVISOR MUST SUBMIT A COMPLETED FORM TO THE ENGAGEMNT TEAM OR SEND AN EMAIL WITH THIS FORM ATTACHED TO FEITCAPSTONE@UTS.EDU.AU

Supervisor (and assessor if required) to complete:

You should use the completed Appendix B Assessment Form provided by the student to **assess** the project indicators. Table 2 in the student guide provides a description of the 'level' expected for a score of 0 to 5. Complete and sign the assessment summary on page 1 of the Appendix B assessment form.

Your overall **evaluation** of the project is required to be documented by completing the table 3 – reproduced below. The evaluation considers the overall (holistic) aspects of the project rather than specific components assessed by the indicators. Your response to the questions below should be scaled using the same criteria described in table 2.

	Evaluation question	Supervisor/ Assessor evaluation
Content	Does the candidate clearly identify a question to be answered or problem to be solved?	0 1 2 3 4 5
	Does the candidate present the results of the project in a succinct and cogent form, with suitable illustration where appropriate?	0 1 2 3 4 5
	Does the candidate demonstrate significant engineering judgement at a level that would be reasonably expected from a recent engineering graduate?	0 1 2 3 4 5
	Is the content sufficiently substantial and broad ranging to allow coverage of the chosen assessment indicators?	0 1 2 3 4 5
	Does the report contain sufficient material suitable for publication? **H (5):** Peer Reviewed Conference Paper **D (4):** Editor Reviewed Conference Paper (IEEE standard) **C (3):** Engineering Paper / Seminar for graduate audience **P (2):** Engineering application note (provide graduate engineers to help them to learn about / gain an appreciation of subject material.	0 1 2 3 4 5
Knowledge / Ability	Does the candidate exhibit sufficient knowledge of the research topic and familiarity with the discipline it embraces for a report at this level?	0 1 2 3 4 5
	Does the candidate demonstrate a capacity for clear thinking?	0 1 2 3 4 5
	Does the candidate demonstrate significant techniques of analysis and/or evaluation as outlined in the chosen assessment indicators?	0 1 2 3 4 5
	Has the candidate demonstrated an understanding of project management techniques and applied them effectively in their capstone project.	0 1 2 3 4 5
	Has the candidate demonstrated an ability to manage their own time and processes effectively, prioritising competing demands to achieve the required goals and objectives	0 1 2 3 4 5
Presentation	Does the work represent a well planned approach to the subject matter?	0 1 2 3 4 5
	Is the report structured appropriately?	0 1 2 3 4 5
	Does the candidate appropriately orient the reader to the ground to be covered and the arguments made?	0 1 2 3 4 5
	Is the presentation of the report, in matters of grammar, spelling, punctuation and general appearance, adequate?	0 1 2 3 4 5

Finally, Table 4 in Appendix B of the student guide prescribes how your recommended final mark/grade for the project is determined.

I / we have reviewed the turnitin similarity report and am/are satisfied with the originality and academic integrity of this work.

I / we recommend the student is awarded the following mark/grade for Capstone Project:

….. Z, 50P, 55P, 60P, 65C, 70C, 75D, 80D, 85H, 90H, 95H, 100H   **(circle mark)**

Supervisor:………………………….……… Signature:……………………………...……..Date:……………………

Assessor:…………………………………Signature:……………………………….………Date:………………...…

7.6   Appendix F: Capstone Project Poster Presentation

All students presenting at the Capstone Project Presentation Day are required to deliver a poster ready to display at the start of their presentation session (either morning or afternoon session).

The poster session is a 'public' venue, and as such you should ensure the material in your poster does not breach any Intellectual Property Agreements or Confidentiality Agreements.

About the Poster genre:

- Poster sessions provide the opportunity for in-depth exchanges with interested members of the audience.
- Posters allow a large amount of information to be transferred in a limited amount of time,
- Posters should be designed so they can be available for unattended viewing,
- The poster, therefore, should be self-explanatory so that the presenter is free to supplement and discuss particular points raised by viewers,
- The intended audience would be your peers as well as invited guests and academics.

The following specifications shall be adhered to. Those that do not meet the requirements will not be considered for the Capstone Project Poster Prize.

Poster Specifications:

- The poster shall be a single A1 sized sheet, on appropriate poster paper (typically 140gsm). Note: posters need not be laminated – this is your choice;
- Posters must have title and author, and Capstone Student project number (DO NOT include your student number)
- The content, including text, diagrams, pictures, etc. of the posters shall be arranged so that the text is readable when the poster is displayed in either landscape or portrait format;
- The poster shall be ready-to-display prior to the start of your capstone presentation sessions (for the date of poster submission please check the announcements on UTS online). We will provide four adhesive backed Velcro® mounting strips which are fixed to the back of the poster so it can be mounted on the screens provided.

This summary will form part of the D/HD Capstone Project assessment and will be judged on the basis of content, presentation and suitability for use as at a poster presentation.

Some posters may be selected for display at other Faculty events. These posters will not be returned to you.

7.7   Appendix G: Evaluation Criteria for Prizes

G.1-Dean's Best Presentation Award criteria

Technical competence	Presentation style	Presentation content	Time management	Organisation/ effort	Total
Out of 10	Out of 10	Out of 10	Out of 10	Out of 10	Out of 50

G.2-Allan Chappel Innovation award criteria

Innovation	Invention	Potential for Commercialisation	Gain to Society	Technical Competence	Presentation & Communication	Total
Out of 20	Out of 20	Out of 10	Out of 10	Out of 20	Out of 20	Out of 100

G.3-Best Poster Award criteria

Appearance-It attracts viewer's attention	Well organized and easy to follow	Words are easy to read from an appropriate distance	Content is clear and easy to understand	Approach taken is technically sound	Conclusions are stated clearly	Total
Out of 5	Out of 5	Out of 5	Out of 5	Out of 5	Out of 5	Out of 30

FACULTY COPY
This form and documents identified on it to
be submitted along with the project
proposal to the FLP by the student

7.8   Appendix H: EHS Risk Assessment for Capstone Project

This form is based on UTS EHS Risk Assessment - For Undergraduate Practical Work. The form is to be completed for each student undertaking their UTS:Engineering Capstone Project and submitted with the project proposal. If there are subsequent changes to the details described below then an updated copy of the form should be submitted to the Capstone Project subject coordinator.

Student Name		Supervisor Name:	
Student No.		Project Title	
Major			
Subject No.	48006 / 48012 / 48026 / ………..	Date of Assessment	

Note to academics regarding consultation: Occupational health and safety legislation requires that staff involved with the subject (e.g. technical support staff) must be consulted during risk assessments when decisions are made about the measures to be taken to eliminate or control OHS risks and when risk assessments are reviewed.

Will the Capstone Project include work undertaken at a workplace external to UTS (eg. the student's workplace, or UTS Industry/Research partner)?
☐   NO → continue to the next question
☐   YES → the **external works supervisor to complete the following**:

An appropriate OHS Workplace Safety Program is in place at the location where the student will be working   **YES / NO**

Please attach your business card to this form

External Workplace Supervisor signature   Date   .

Does the project possess any of the EHS hazards listed below in step 2?

☐   NO → simply skip to step 6 and sign the declaration.
☐   YES → complete this form.

Please include any further notes/comments related to EHS matters for this Capstone Project

STEP 1: DESCRIBE THE HAZARDOUS ACTIVITIES/TASKS IN THE PRACTICAL SESSION

Describe the tasks - list the methodology and briefly describe the steps involved in carrying out the practical work. Attach additional pages/documentation as needed.

STEP 2: IDENTIFY THE HAZARDS

a) Are you using… *(Tick boxes ☑ where applicable)*

☐ plant/equipment

☐ ionising radiation sources or equipment [2,3]

☐ plug-in electrical appliances [2]

☐ lifts/hoists/cranes [3]

☐ pressure vessels/boilers [3]

☐ imported biological material, cytotoxins, genetic manipulation [2]

☐ chemicals (hazardous substances/dangerous goods) [1]

☐ sharps/needles

☐ pathogens/infectious materials [2]

☐ compressed gas

b) **Does the task involve… *(Tick boxes ☑ where applicable)***

☐ using tools/equipment with moving part(s)

☐ using tools/equipment that vibrate

☐ electrical wiring [3]

☐ hazardous waste (biological or chemical)

☐ working with animals/insects

☐ working with fungi/bacteria/viruses

☐ exposure to bodily fluids

☐ fieldwork [2]

☐ clinical/industrial placement

☐ working at a height

☐ working with lasers, microwaves or ultraviolet light

☐ working in isolation for extended periods

☐ working in a confined space

☐ manual handling: repetitive or awkward movements

☐ manual handling: lifting or moving awkward or heavy objects

☐ violent or volatile clients/interviewees

c) **Is there… *(Tick boxes ☑ where applicable)***

☐ noise [2]

☐ dust/fumes/vapours/gases

☐ extreme temperatures

☐ a risk of fire/explosion

☐ slippery surfaces/trip hazards

☐ poor ventilation/air quality

☐ a work area that is not suited for the task

☐ other

---

[1] Specific risk assessment must be completed for hazardous substances and dangerous goods – see Step 3
[2] Specific control measures must be put in place for these hazards – see Step 3
[3] Specific licences may be required for these hazards – see Step 3

STEP 3:   EXISTING CONTROL MEASURES

a)   Note strategies already in place to minimise the likelihood and/or severity of harm or loss.

☐ guarding/barriers

☐ biosafety cabinet

☐ fume cupboard/local exhaust ventilation

☐ lifting equipment/trolleys

☐ regular maintenance of equipment

☐ supervision

☐ training/information/instruction

☐ notes in laboratory/workshop manual or student handouts

☐ Personal Protective Equipment - gloves, boots, eye protection, hardhat, facemask, hearing protection, protective clothing

b)   Note any specific risk assessments or licenses.

☐ chemical risk assessment (hazardous substances and dangerous goods)

☐ certification/licenses for operators of equipment

☐ test and tag plug-in electrical equipment

☐ monitor exposure levels (sound /substance/radiation)

☐ UTS Fieldwork Guidelines for overnight excursions in the field

☐ Biosafety Committee assessment for genetic manipulation, cytotoxins, pathogens, imported biological material, ionising radiation sources

☐ equipment licenses (pressure vessels, radiation equipment)

c)   Note any emergency response systems.

☐ first aid kit

☐ chemical spill kit

☐ extended first aid kit

☐ evacuation/fire control

☐ safety shower

☐ eye wash station

☐ emergency stop button

☐ remote communication mechanism

☐   other risk control measures

STEP 4:   ESTIMATED RISK LEVEL

Rate the level of risk, based on the **LIKELIHOOD** of harm or loss occurring and the **CONSEQUENCE** of that harm or loss, by marking the 'risk matrix' below.

When doing this, consider:

- The harm or loss (to people, physical environment, or the University) that might be caused by the hazards listed, &
- The existing controls measures listed above

		CONSEQUENCE				
		Insignificant	Minor	Moderate	Major	Catastrophic
LIKELIHOOD	Almost certain	High	High	Extreme	Extreme	Extreme
	Likely	Medium	High	High	Extreme	Extreme
	Possible	Low	Medium	High	Extreme	Extreme
	Unlikely	Low	Low	Medium	High	Extreme
	Rare	Low	Low	Medium	High	High

For details on how to use this table, see https://www.uts.edu.au/about/safety-and-wellbeing/health-and-safety-management/risk-management/assess-risk

High Risk and **Extreme Risk** activities must not be carried out.

STEP 5: ACTION REQUIRED TO FURTHER CONTROL THE RISK

Are there any further actions required to reduce risk?

☐ **YES**   ☐ **NO (Go to Step 6)**

If risk can be further reduced to a practicable level, then note further actions required. Base these on the priorities listed to the right. Also list any specific assessments required.

Refer to the example controls listed earlier. Also consider:
- Redesigning the workplace or activity
- Replacing the hazard with something less hazardous

Once the actions are complete, sign and date the form.

1. Eliminate the hazard
2. Keep the hazard and people apart
3. Change work methods
4. Use personal protective equipment

Further Actions Required	Date Completed	Signed

STEP 6: ARE THE RISKS CONTROLLED?

To be signed when actions are completed as noted in Step 5.

Student name (please PRINT)	Student signature	Date

Supervisor name (please PRINT)	Supervisor signature	Date