Faculty of Engineering

ENGG3600 Vertically Integrated Projects

Course Outline

2022
Version control

Changes will not ordinarily be made to Course Outlines once published, especially so for assessment structure. Sometimes, however, it may be necessary to make minor adjustments, such as to the course schedule. Such changes will be documented here.

<table>
<thead>
<tr>
<th>Revision</th>
<th>Date</th>
<th>Changes</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td>10/12/20</td>
<td>Initial version</td>
</tr>
</tbody>
</table>
1. Staff

Course Authority for the Faculty of Engineering

Professor Sami Kara
Location: Ainsworth Building (J17), Level 3, Room 301A, Kensington Campus
Phone: +61 2 9385 5757
Email: s.kara@unsw.edu.au

Operational support via The ChallENG Program: challeng@unsw.edu.au

Contacts for the projects

The following table lists the project coordinators for this course. The table also provides their contact details. *Emails and phone calls to the lecturers or the coordinator should only be for personal reasons (e.g., absences, sickness and special consideration)*. If required, individual consultations may be arranged. However, questions about the project, course content or assessments should be posted on the MS Teams site provided.

<table>
<thead>
<tr>
<th>Data Dynamics</th>
<th>MINEX</th>
<th>Mini Solar</th>
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<tbody>
<tr>
<td><em>Dr Lina Yao</em></td>
<td><em>Dr Chengguo Zhang</em></td>
<td><em>Prof. Alison Lennon</em></td>
</tr>
<tr>
<td>Location: Room 501J, K17</td>
<td>Location: Room 163, Old Main</td>
<td>Location: Tyree Energy Technologies Building, Room 127</td>
</tr>
<tr>
<td>Phone: 9385 6588</td>
<td>Phone: 9385 4035</td>
<td>Phone: 9385 7942</td>
</tr>
<tr>
<td>Email: <a href="mailto:lina.yao@unsw.edu.au">lina.yao@unsw.edu.au</a></td>
<td>Email: <a href="mailto:chengguo.zhang@unsw.edu.au">chengguo.zhang@unsw.edu.au</a></td>
<td>Email: <a href="mailto:a.lennon@unsw.edu.au">a.lennon@unsw.edu.au</a></td>
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<thead>
<tr>
<th>Biotic Hydrofuel</th>
<th>NextGEN Energy Storage</th>
<th>3D 4 Health</th>
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<tbody>
<tr>
<td><em>Dr Nicholas Bedford</em></td>
<td><em>Assoc. Prof. Chris Menictas</em></td>
<td><em>Dr Xiaopeng Li</em></td>
</tr>
<tr>
<td>Location: 422 Hilmer Building</td>
<td>Location: Room 402F, Ainsworth Building</td>
<td>Ainsworth Building (J17) Level 3, Room 311B Kensington Campus</td>
</tr>
<tr>
<td>Phone: 9385 7518</td>
<td>Phone: 9385 6269</td>
<td>Phone: 9385 6784</td>
</tr>
<tr>
<td>Email: <a href="mailto:n.bedford@unsw.edu.au">n.bedford@unsw.edu.au</a></td>
<td>Email: <a href="mailto:c.menictas@unsw.edu.au">c.menictas@unsw.edu.au</a></td>
<td>Email: <a href="mailto:xiaopeng.li@unsw.edu.au">xiaopeng.li@unsw.edu.au</a></td>
</tr>
</tbody>
</table>

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<thead>
<tr>
<th>Sunswift</th>
<th>The Neural Stimulator</th>
<th>What’s Brewing?</th>
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<tbody>
<tr>
<td><em>Mr Richard Hopkins</em></td>
<td><em>Dr Mohit Shivdasani</em></td>
<td><em>Assoc. Prof. Pierre Le Clech</em></td>
</tr>
<tr>
<td>Phone: 0481 711 374</td>
<td>Location: Room 515A, Samuels Building</td>
<td>Location: Hilmer Building, Level 5, Room 521 (enter via SEB E8)</td>
</tr>
<tr>
<td>Email: <a href="mailto:richard.hopkins1@unsw.edu.au">richard.hopkins1@unsw.edu.au</a></td>
<td>Phone: 9385 0561</td>
<td>Phone: 9385 5762</td>
</tr>
<tr>
<td><em>Mr Daniel Eggler</em></td>
<td>Email: <a href="mailto:m.shivdasani@unsw.edu.au">m.shivdasani@unsw.edu.au</a></td>
<td>Email: <a href="mailto:p.le-clech@unsw.edu.au">p.le-clech@unsw.edu.au</a></td>
</tr>
<tr>
<td>Location: 402H, Ainsworth Building</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
| **Cellular Agriculture**  
*Prof. Johannes le Coutre*  
Location: Science and Engineering Building – E8, Room 437  
Phone: 9385 7195  
Email: johannes.lecoutre@unsw.edu.au | **Composite Cryotanks**  
*Dr. Garth Pearce*  
Location: Ainsworth Building (J17)  
Level 2, Room 208E  
Phone: 9385 4127  
Email: g.pearce@unsw.edu.au | **CyberShield**  
*Prof. Vijay Sivaraman*  
Location: Electrical Engineering and Telecommunications (G17)  
Level 3, Room 334  
Phone: 9385 6577  
Email: vijay@unsw.edu.au |
|---|---|---|
| **Design-MedTech**  
*Prof. Tracie Barber*  
Location: Ainsworth Building (J17)  
Level 4, Room 401A  
Phone: 9385 4081  
Email: t.barber@unsw.edu.au | **Flying Diesel Machines**  
*Prof. Shawn Kook*  
Location: Ainsworth Building (J17) Level 4  
Phone: 9385 4091  
Email: s.kook@unsw.edu.au | **GraphAbility**  
*A/Prof. Serge Gasper*  
Location: CSE Building  
Phone: 9385 6934  
Email: serge.gasper@unsw.edu.au |
| **InsightMed**  
*Prof. Arcot Sowmya*  
Location: Room 412-E, Building K-17 CSE Building  
Phone: 9385 6933  
Email: a.sowmya@unsw.edu.au | **IoT United**  
*Prof. Sri Parameswaran*  
Location: Building K-17 CSE Building  
Phone: 9385 7223  
Email: sri.parameswaran@unsw.edu.au | **OptoSpine**  
*Dr. Mohit Shivdasani*  
Location: Room 515A, Level 5, Samuels Building  
Phone: 9385 0561  
Email: m.shivdasani@unsw.edu.au |
| **R2: Robo-re-Cycle**  
*Prof. Sami Kara*  
Location: Ainsworth Building J17  
Level 3, Room 301A  
Phone: 9385 5757  
Email: s.kara@unsw.edu.au | **Smart Wearable Tech**  
*Prof. Chun Wang*  
Location: Ainsworth Building J17  
Level 1, Room 110  
Phone: 9385 3232  
Email: chun.h.wang@unsw.edu.au | **Social AI**  
*Dr. Yang Song*  
Location: CSE Building K17, Room 401E  
Phone: 9385 5757  
Email: yang.song1@unsw.edu.au |
| **Space Power Systems**  
*Prof. Gavin Conibeer*  
Location: 245 Tyree Energy Technologies Building  
Phone: 9385 7858  
Email: g.conibeer@unsw.edu.au | **Sun to H2O**  
*A/Prof. Robert Taylor*  
Location Ainsworth Building (J17) Level 4, Room 402C  
Phone: 9385 5400  
Email: robert.taylor@unsw.edu.au | **Telehealth for Stroke**  
*Dr. Reza Argha*  
Location: Samuels Building, Rm 525  
Phone: 9385 3922  
Email: a.argha@unsw.edu.au |
| **UrbanAI**  
*A/Prof. M. Hank Haeusler*  
Location: Red Center West Wing, Room 4019  
Phone: 9385 4841  
Email: m.haeusler@unsw.edu.au |   |   |
2. Course information

Units of credit: This is a 6 unit of credit course that runs across the year as 2 credit points per term. You will have at least five contact hours per week. This will be a combination with academics and VIP team members.

Pre-requisite:

ENGG1000 – Introduction to Engineering Design and Innovation (Undergraduate) for engineering students only. Other faculties, Food Science and Computer Science are exempt.

Pre-requisite conditions:

1. Must have completed at least 72 UoC by the start of the VIP program
2. Must be in good academic standing
3. Students not from Engineering can enrol in ENGG3600 as a General Education Elective

Weekly team meetings during term time will be organised directly by your project coordinator/academic lead.

2.1 Course summary

This course is designed for highly motivated undergraduates seeking the opportunity to integrate specific research, technical and project-based learning components into their undergraduate program. This course will also provide students with experience in the areas of leadership, project management and presentation skills thus giving them a head start when seeking employment.

The course runs across three consecutive terms within a single calendar year: T1, 2 and 3 (2 UoC per Term) for a total of 6 UoC at the end, which enables students to extend their research and project-based learning experience beyond a single term.

You must complete all three terms of the course and satisfy all assessment requirements as set out by the project coordinator to receive full course credit. Partial credits will not be given.

Students will pursue research or project execution in their selected projects, explore interdisciplinary research and development, gain a global perspective, develop an entrepreneurial mindset, or give back to the community through service learning. Benefits for participating can include unique opportunities and experiences, mentoring by academic supervisors, guest speakers, and opportunities to engagement with industry partners.

Under the guidance of academics and mentors, this course provides a vehicle for guided but independent group project work on varying briefs. The learning and effort in the course are largely team-based, with team-members ideally being drawn from different discipline areas. Students will develop their skills in critical thinking, problem definition, creative and systematic design, precise written and oral technical communication skills, and professional skills including communication, project management, team organisation and coordination. The course allows students to design, build and research a variety of projects.

ENGG3600 is the second course in a "vertical" series of research and project-based learning courses, with ENGG2600 and ENGG4600 also offered. This allows students an opportunity for continual engagement with their chosen VIP team over multiple years and to develop their skills as they progress though the VIP series of courses.

As student progress through the VIP courses or joins the team at a more senior level, they are expected to perform at a higher technical level and have a mature and positive influence on team. As a ENGG3600 student you will demonstrate greater awareness of project/team management and support more senior team members with some of the following tasks but not limited to:
mentoring/coaching new and younger students, providing strategic and technical advice to academics and team mates, recruiting new team members, running inductions, organising succession planning and handover to new team members and leading by example.

2.2 Course aims

This course enhances student’s teamwork, design skills and independent study skills through a student-driven design project or through academic-driven research. It aims to develop students critical thinking skills, and their ability to define and respond to a specific problem or project or research outcome. Professional skills such as teamwork, written and oral skills, strategic thinking and organisational skills are desired outcomes from this course.

2.3 Course learning outcomes (CLO)

At the successful completion of this course:

1. (Research/Enquiry) Students will be able to demonstrate an understanding and fundamental application of engineering enquiry-based methods in the pursuit of solving an engineering problem.

2. (Technical) Students will be able to apply a fundamental disciplinary body of knowledge related to their project work and the various facets and practical issues encountered.

3. (Teamwork) Students will be able to demonstrate an awareness and application of the elements of effective teamwork, including constructive participation, respect, group decision-making, active listening, questioning and debate, and collaboration.

4. (Leadership) Students will be able to demonstrate an awareness of the role leadership plays in a diverse team.

5. (Management) Students will be able to apply effective engineering project management and self-management principles. Self-management principles include, but are not limited to, time and priority management, ability for critical self-review, commitment to self-directed learning and professional development, and presenting a professional image.

6. (Communication) Students will be exhibit competence in oral and/or written communication in the context of the engineering project, to a variety of stakeholders, via presentation, written reports, and contribution to team and mentor meetings.

7. Students will be able to independently work towards filling an identified gap in their capability.
2.4 Relationship with the discipline and the rest of your program

The following table sets out how the learning outcomes of this course are connected to your program learning outcomes as articulated in the [Engineers Australia Stage 1 Competencies](https://www.engineersaustralia.org.au/competencies).

<table>
<thead>
<tr>
<th>Course Learning Outcome (CLO)</th>
<th>LO Statement</th>
<th>EA Stage 1 Competencies</th>
<th>Related Tasks &amp; Assessment</th>
</tr>
</thead>
<tbody>
<tr>
<td>CLO 1</td>
<td>(Research/Enquiry) Students will be able to demonstrate an understanding and fundamental application of research enquiry-based methods in the pursuit of solving problems.</td>
<td>PE1.5, 1.6, 2.1, 2.2, 2.3</td>
<td>Assessment 4</td>
</tr>
<tr>
<td>CLO 2</td>
<td>(Technical) Students will be able to apply a fundamental disciplinary body of knowledge related to their project work and the various facets and practical issues encountered.</td>
<td>PE1.5, 1.6, 2.1, 2.2, 2.3</td>
<td>Assessment 4</td>
</tr>
<tr>
<td>CLO 3</td>
<td>(Teamwork) Students will be able to demonstrate an awareness and application of the elements of effective teamwork, including constructive participation, respect, group decision-making, active listening, questioning and debate, and collaboration.</td>
<td>PE3.6</td>
<td>Assessment 3, 4</td>
</tr>
<tr>
<td>CLO 4</td>
<td>(Leadership) Students will be able to demonstrate an awareness of the role leadership plays in a diverse team.</td>
<td>PE3.6</td>
<td>Assessment 3, 4</td>
</tr>
<tr>
<td>CLO 5</td>
<td>(Management) Students will be able to apply effective engineering project management and self-management principles. Self-management principles include, but are not limited to, time and priority management, ability for critical self-review, commitment to self-directed learning and professional development, and presenting a professional image.</td>
<td>PE2.4, 3.4, 3.5</td>
<td>Assessment 3, 4</td>
</tr>
<tr>
<td>CLO 6</td>
<td>(Communication) Students will exhibit competence in oral and/or written communication in the context of the VIP project, to a variety of stakeholders, via presentation, written reports, and contribution to team and mentor meetings.</td>
<td>PE3.2, 3.4</td>
<td>Confidence in Presenting workshop and Assessment 1, 2, 3, 4</td>
</tr>
<tr>
<td>CLO 7</td>
<td>Students will be able to independently work towards filling an identified gap in their capability.</td>
<td>PE3.5</td>
<td>Assessment 2, 4</td>
</tr>
</tbody>
</table>
2.5 Course evaluation and development

We want your feedback on this course whether positive or negative. You can provide verbal or written feedback directly to your project coordinator, the course authority, through our course’s anonymous feedback forum or through the University’s MyExperience survey.

3. Strategies and approaches to learning

Under the guidance of academics and mentors, this course (and the more senior versions) provides a vehicle for research- and project-driven group work. The structure of the course is largely team-based and assessments support and reflect this focus.

3.1 Learning and teaching activities

The main teaching strategy is weekly academic mentor meetings (similar to a thesis or academic consultation), however, there are supporting workshops provided for this course. Detailed and frequent email/Moodle use and use of Office 365 and guidance from academics provide the scaffold for the learning outcomes of the course. Depending on the nature of the project/research, industry and technical staff will also provide mentorship, providing elements of research and project-based learning.

At the end of the course, you will have the confidence to work in a team to deliver a shared research goal.

3.2 Expectations of students

Integrity and Respect

The UNSW Student Code of Conduct (https://student.unsw.edu.au/conduct) among other things, expects all students to demonstrate integrity in all the academic work and to treat all staff, students and visitors to the University with courtesy, tolerance and respect.

Time commitment

UNSW expects students to spend approximately 150 hours to successfully complete a 6 UOC course like ENGG3600. You will have at least 1 contact hour per week of team meetings. It is suggested to use up to 4 hours per week devoted to collaborative working time, professional development workshops, assessments, and working on your assigned deliverables.

Competence

You will be developing new competencies over the year and to demonstrate the standards we expect, there will be marking rubrics or guidelines provided for all assessments. You will be provided with feedback on your assessments from your team coordinators and peers so you can continue to improve over the year.

Participation

We expect you to actively participate in all face to face or online sessions. This includes listening, taking meeting notes, asking questions or engaging in peer discussions.

As part of the vision of the course, you will need to work effectively with your team members. We expect all team members to agree on how they will work together as a team.
Students are expected to contribute to online discussions in the MS Teams communication channels. **Communicating via MS Teams** is especially important in the vertically integrated projects program as it can **form part of the official record** to document the research generated. You will likely need to discuss parts of the design process, research challenges faced and task prioritisation here. It is expected that you will help others in your team and the project coordinators will contribute too.

**Attendance and punctuality**

We expect students to be punctual and **attend at all meetings, workshops and organised team work sessions**. University commitments take precedence over regular work activities, holidays etc. Students who attend less than 80% of their possible sessions may be refused final assessment.
4. Course structure and schedule

This course consists of a minimum of 1-hour weekly meetings with your team lead and the occasional 2-hour professional development workshop. You are expected to take up to 4 hours of non-class contact hours to do your project work and complete assessments. Please note the schedule for the workshops below may be subject to change. You may have additional optional professional development workshops that your team may participate in throughout the year. You will be notified by MS Teams chat when these additional workshops will be scheduled.

<table>
<thead>
<tr>
<th>Time/location</th>
<th>Activity/session</th>
<th>Related CLO</th>
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</thead>
<tbody>
<tr>
<td><strong>Term 1</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Week 8</td>
<td>Welcome and info session (2 h)</td>
<td>N/A</td>
</tr>
<tr>
<td></td>
<td>Welcome to the program and overview on the course structure and other info regarding VIP.</td>
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</tr>
<tr>
<td></td>
<td>Self-reflection and Team evaluation assessment</td>
<td>3-6</td>
</tr>
<tr>
<td></td>
<td>You will need to complete a self-reflection and an assessment of your fellow team mates to identify how you are currently progressing and where possible improvements can be made to how you and your team members work. This assessment will be available through Moodle.</td>
<td></td>
</tr>
<tr>
<td>Week 9</td>
<td>Notebook</td>
<td>6,7</td>
</tr>
<tr>
<td></td>
<td>You will be marked on the progress in your OneNote online notebook to identify and give you feedback your current progress.</td>
<td></td>
</tr>
<tr>
<td><strong>Term 2</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Week 8</td>
<td>Assessment 3 - Self-reflection and Team evaluation</td>
<td>3-6</td>
</tr>
<tr>
<td></td>
<td>You will need to complete a self-reflection and an assessment of your fellow team mates to identify how you are currently progressing and where possible improvements can be made to how you and your team members work.</td>
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</tr>
<tr>
<td>Week 9</td>
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<td>You will be marked on the progress in your OneNote online notebook to identify and give you feedback your current progress.</td>
<td></td>
</tr>
<tr>
<td><strong>Term 3</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Week 1-4</td>
<td>Confidence in Presenting Stage 1 (beginners) and Stage 2 (advanced)</td>
<td>6</td>
</tr>
<tr>
<td></td>
<td>Confident Presenting – Stage 1</td>
<td></td>
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<tr>
<td></td>
<td>The ‘Confident Presenting’ short course comprises one online Moodle module and one practical skills workshop. The Moodle module will guide students to create and deliver their own elevator pitch about their VIP</td>
<td></td>
</tr>
</tbody>
</table>
In the associated practical workshop, you will learn how to improve your personal presence and presentation skills and you will also present your VIP project elevator pitch to your peers.

**Confident Presenting – Stage 2**

This course provides an advanced perspective/skillset to confident presenting stage 1 and will include one online Moodle module and one practical skills workshop. The Moodle module will guide students to create an engaging and effective presentation about their VIP project for a target audience (external), such as a potential industry partner. In the associated practical workshop, you will learn how to improve your skills in storytelling, create a powerful ‘call to action’ and handle Q&A sessions. You will also have the opportunity to present your VIP presentation to your peers.

VIP students must complete Confident Presenting Stage 1 before doing Confident Presenting Stage 2. A student may request an exemption from Stage 1 from their lead academic if they have already demonstrated advanced presenting skills.

A link to register for these short courses will be posted in Students VIP teams chat and emailed to project coordinators to distribute to students.

### Self-reflection and Team evaluation assessment

You will need to complete a self-reflection an assessment of your fellow team mates to identify how you are currently progressing and where possible improvements can be made to how you and your team members work.

### Notebook

You will be marked on the progress in your OneNote online notebook to give you feedback on your final progress.

### Technical assessment

The final output for your technical will be finalised by the end of term 3 as decided on with your team leads.

### Communication assessment

Pending Covid health and safety rules, the goal will be to have an expo for Vertically Integrated Projects to showcase your team’s successes during the year to an audience of academics and potentially industry partners and future students. This will form a major part of your communication assessment unless your team has decided on a different assessment approach.
5. Assessment

5.1 Assessment tasks

The four assessment tasks in the VIP course have been designed to allow you to demonstrate your ability to meet the course learning outcomes. To give you an early indication of your progress you will be given an indicative mark from the assessments you do in Term 1. Your final marks will be determined from the completed assessments in Term 3.

Assessment 1: Communication (15%)

This assessment task will be in an oral and/or written format and agreed upon in consultation with your project coordinator based on how they would like to fulfil this communication assessment task. This assessment will require you to demonstrate competence in explaining in an audience appropriate format, multiple aspects of your project such as the project scope, challenges faced and broader implications of your research. This assessment task will be in an oral and/or written format and agreed upon in consultation with your project coordinator based on how they would like to fulfil this communication assessment task. The confident presenting workshop in term 3 will give you additional skills to be able to complete this assessment. As a result of this workshop timing, the bulk of your grade for communication will likely be assessed in term 3. See the generic assessment rubric in section 5.3 Assessment criteria and standards.

An example of what this assessment could include, is included below. Ensure you talk to your project coordinator early about this assessment if they have not provided detail of what they expect you to do for this assessment before the census date in Term 2:

Communication assessment

You will create a short initial pitch presentation of your project scope in term 1 or 2 to prepare you for your assessed pitch at the VIP expo in week 11 of term 3.

Practice Pitching (Term 1 or 2)

- Students give around a 3-minute presentation to the project coordinator and your team on the project scope, and their progress to realising their goals. Your peers will give you feedback on your presentation.

Formal pitch presentation (15%, Term 3)

- Students present their project at the VIP expo which will be open to industry leaders, members of the public and high schools. The format could be as a poster presentation, live demonstration, video presentation, oral presentation, etc. You will be marked on the effectiveness of your presentation in explaining the project goals, the impact on society, innovation of your approach and the viability of your created research.

Assessment 2: Notebook (10%)

You will need to keep a detailed notebook of your work in your allocated OneNote online notebook and submit these for marking each term by week 9. A design notebook is important for documenting your project from the initial problem definition, right through to the product design. As you follow the design process, you will be adding to your notebook details for the steps you took to reach the final design including items such as your research, ideas, drawings and reflections. In your first term as a team, you need to create a template on how to organise your notebooks. From then on, it is important
that academics and students do regular informal notebook check-ins to ensure you are keeping a
good record of your research.

A logically organised notebook is important for readability and it should allow for any other person to
understand the steps and choices you made and repeat it for themselves if they ever needed to.
Make sure you document all your work in your notebook as you do your research as if it is not
documented you have no proof that you did it. Documentation recorded in your notebook is vital for
improving your critical thinking skills as creator or a researcher, designing and managing realistic
project plans, preparing patent applications, and providing you and others the ability to audit the
designs you created. Note that your entries in your online OneNote notebook are automatically time
stamped and regularity of contributions is part of the assessment criteria. The rubric for the notebooks
is in section 5.3 Assessment criteria and standards.

Assessment 3 (15%): Self-Reflection and Peer Review

As part of your continuous development in every term you will do a self-reflection on how well you are
working and a peer review of your fellow team members. The self-reflection and team evaluation will
be assessed via the Moodle course site.

Part A – Self-reflection (10%) – Week 8 in term 1, 2 and 3

The self-reflection task will involve four reflective questions as part of a strengths, weakness,
opportunity, and threat (SWOT) analysis that will help you identify how well you are currently working
and the areas for where you can improve your workflow. For the four dimensions of the SWOT
analysis you will need to consider how you are performing with respect to the deliverables that you
have been assigned.

1. Strengths
2. Weaknesses
3. Opportunities
4. Threats

Note that since this is a self-reflection, the core focus should be on how you are independently
working, although you may make broader reference to how you see yourself operating in the team in
the opportunities and threats dimensions. It is expected that you will write approximately one A4 page
for this reflection (12-point Arial, double-spaced text).

You will be assessed for the SWOT analysis using the rubric in section 5.3 Assessment criteria and
standards.

Part B – Team evaluation (5%) – Week 8 in term 1, 2 and 3

The team evaluation will involve you evaluating each team member including yourself on a 5-point
scale; extraordinary effort, above average effort, average effort, below average effort, well below
average effort. Since you are rating your peers on effort compared to the average performance in
your team, your ratings for most people should be around 3 (average effort). If a team member has
gone above and beyond, or performed at a lower than average effort, then your rating should reflect
that. In cases where you rate a team member above or below the average you need to provide a
detailed comment to justify your rationale for your decision. A justification should include information
on what a student is doing well and how they could improve. Note that non-completion of the team
evaluation for a term will result in a zero mark for that term. The final score you receive will be based
on your fellow team members feedback on the following four dimensions:
Communication

- You will need to rate your team members on their communication skills; including participation during meetings, listening to team members ideas, actively contributing to discussions, and timely responses to emails or other messages. If you believe each team member has performed equally in this aspect, then give everyone a rating of average effort.

Organisation

- Organisational skills and good time management are very important skills that can be brought to a team. You will need to rate your team members compared to others on the team. If you believe each team member has performed equally in this aspect, then give everyone a rating of average effort.

Completion of assigned responsibilities

- Accepting responsibility for allocated tasks and completing these assignments to a high standard and in a timely manner is very important for the functioning of a successful team. Rate your team members according to how reliable the team member has been in completing shared allocated tasks. If you believe each team member has performed equally in this aspect, then give everyone a rating of average effort.

Leadership qualities

- It is important for team members to develop and display good leadership skills. These might include effective decision making, an honest and ethical approach and their ability to inspire and motivate their teammates. Rate your team members according to their leadership abilities. If you believe each team member has performed equally in this aspect, then give everyone a rating of average effort.

Assessment 4: Technical (60%)

A key part of your learning in this course will be the outputs of the research work that you will undertake with your teams. At the start of the year you will need to discuss the research deliverables your project coordinator would like you to focus on. Your technical deliverables will need to be recorded regularly in your online OneNote notebook. Note that the research quality of your ideas in your notebook can also contribute to the mark for this assessment. Over the duration of the year you will be evaluated on the development and how well you have attained technical skills during your research. Since the outputs of teams will differ markedly based on what work you will be doing, this assessment could be in forms such as a technical report, business case study, presentation to industry, programming code, verified test case, procedural assay, prototypes, notebook recordings, literature review, marketing websites, competition entries, journal articles, etc.
## 5.2 Summary of the assessment tasks

<table>
<thead>
<tr>
<th>Task</th>
<th>Weight</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Assessment 1: Communication</strong> <em>(Term 3, week 11)</em></td>
<td>15%</td>
<td>Students will present their project work as written and/or oral format as determined with their project coordinator. This assessment is linked to learning outcome 6.</td>
</tr>
<tr>
<td><strong>Assessment 2: Notebook</strong> <em>(Week 9, Term 1, 2 + 3)</em></td>
<td>10%</td>
<td>Students will regularly record their meetings, design work, graphs, drawings, etc. in their online OneNote notebook to document their project management skills and improving their ability to work independently. This assessment is linked to learning outcomes 6 and 7.</td>
</tr>
<tr>
<td><strong>Assessment 3 Part A: Self-reflection</strong> <em>(Week 8, Term 1, 2 +3)</em></td>
<td>10%</td>
<td>Students will complete a self-reflection in the form of a SWOT analysis each term. The feedback from this assessment will help you achieve learning outcomes 3-6. This assessment will be available on the Moodle course page.</td>
</tr>
<tr>
<td><strong>Assessment 3 Part B: Team evaluation</strong> <em>(Week 8, Term 1, 2 +3)</em></td>
<td>5%</td>
<td>Students will complete a team evaluation each term to understand how well they are working with their peers. This assessment can also act as an impetus for reflecting on where students can improve their teamwork. This assessment is linked to learning outcomes 3-6. This assessment will be available on the Moodle course page.</td>
</tr>
<tr>
<td><strong>Assessment 4: Technical</strong> <em>(Completed by end of term 3)</em></td>
<td>60%</td>
<td>Students will complete their major deliverable/s for assessment. This assessment is linked to learning outcomes 1-7.</td>
</tr>
</tbody>
</table>

**Further information**

UNSW grading system: [https://student.unsw.edu.au/grades](https://student.unsw.edu.au/grades)

5.3 Assessment criteria and standards

Assessment 1: Communication marking criteria

The marking rubric/guidelines for this component may be modified in consultation with your project coordinator.

Rubric for an oral presentation

Aspect 1: Presentation skills (25%)

<table>
<thead>
<tr>
<th>Criteria</th>
<th>Grade</th>
</tr>
</thead>
<tbody>
<tr>
<td>Did the presenter speak with clarity (volume, speed, enunciation)?</td>
<td>/5</td>
</tr>
<tr>
<td>Did the presenter speak in an engaging way (tone, passion)?</td>
<td>/5</td>
</tr>
<tr>
<td>Did the presenter engage the audience (eye contact, body language)?</td>
<td>/5</td>
</tr>
<tr>
<td>Did the presenter deliver in a relaxed, confident manner?</td>
<td>/5</td>
</tr>
<tr>
<td>Did the speaker make good use of well-designed visual aids?</td>
<td>/5</td>
</tr>
</tbody>
</table>

Aspect 2: Knowledge base (25%)

<table>
<thead>
<tr>
<th>Criteria</th>
<th>Grade</th>
</tr>
</thead>
<tbody>
<tr>
<td>Was proper background information on the topic given?</td>
<td>/5</td>
</tr>
<tr>
<td>Was the material selected for presentation appropriate to the topic?</td>
<td>/5</td>
</tr>
<tr>
<td>Was enough essential information given to allow the audience to effectively evaluate the work done in context?</td>
<td>/5</td>
</tr>
<tr>
<td>Was the talk free of irrelevant or filler information?</td>
<td>/5</td>
</tr>
<tr>
<td>Did the presenter demonstrate a clear understanding of the material presented?</td>
<td>/5</td>
</tr>
</tbody>
</table>

Aspect 3: Content (50%)

<table>
<thead>
<tr>
<th>Criteria</th>
<th>Grade</th>
</tr>
</thead>
<tbody>
<tr>
<td>Were the aims / objectives clearly stated?</td>
<td>/5</td>
</tr>
<tr>
<td>Were the methods used explained with enough detail?</td>
<td>/5</td>
</tr>
<tr>
<td>Were the research findings clearly described?</td>
<td>/10</td>
</tr>
<tr>
<td>Was the overall content explained and phrased in a way that is suitable for the audience?</td>
<td>/5</td>
</tr>
<tr>
<td>Was there enough technical explanation?</td>
<td>/10</td>
</tr>
<tr>
<td>Were clear conclusions presented?</td>
<td>/5</td>
</tr>
<tr>
<td>Did the conclusions reflect the aims and supported by the data?</td>
<td>/5</td>
</tr>
<tr>
<td>Was prior knowledge cited correctly?</td>
<td>/5</td>
</tr>
</tbody>
</table>
Rubric for a poster presentation

Aspect 1: Layout and Design (25%)

<table>
<thead>
<tr>
<th>Criteria</th>
<th>Grade</th>
</tr>
</thead>
<tbody>
<tr>
<td>Was the poster eye-catching / visually attractive? (colour schemes, images, …)</td>
<td>/5</td>
</tr>
<tr>
<td>Was the poster layout clean and logical? (not too crowded, …)</td>
<td>/5</td>
</tr>
<tr>
<td>Was the poster easily readable? (Font size, style, …)</td>
<td>/5</td>
</tr>
<tr>
<td>Were the headlines easily distinguished from the rest of the content?</td>
<td>/5</td>
</tr>
<tr>
<td>Were the authors easily identified and is contact information available?</td>
<td>/5</td>
</tr>
</tbody>
</table>

Aspect 2: Graphs, images and language (25%)

<table>
<thead>
<tr>
<th>Criteria</th>
<th>Grade</th>
</tr>
</thead>
<tbody>
<tr>
<td>Were all images/graphics high-quality?</td>
<td>/5</td>
</tr>
<tr>
<td>Were all graph-/figure-labels present and comprehensible?</td>
<td>/5</td>
</tr>
<tr>
<td>Did the graphs show only the relevant information or was there unnecessary information in there?</td>
<td>/5</td>
</tr>
<tr>
<td>Were there spelling or grammatical errors?</td>
<td>/5</td>
</tr>
<tr>
<td>Did the images / graphs enhance the text?</td>
<td>/5</td>
</tr>
</tbody>
</table>

Aspect 3: Content (50%)

<table>
<thead>
<tr>
<th>Criteria</th>
<th>Grade</th>
</tr>
</thead>
<tbody>
<tr>
<td>Were the aims / objectives clearly stated?</td>
<td>/5</td>
</tr>
<tr>
<td>Were the methods used explained with enough detail?</td>
<td>/5</td>
</tr>
<tr>
<td>Did the poster show results of experiments/methods?</td>
<td>/10</td>
</tr>
<tr>
<td>Was the content explained and phrased in a way that is suitable for the audience?</td>
<td>/5</td>
</tr>
<tr>
<td>Was there enough technical explanation?</td>
<td>/10</td>
</tr>
<tr>
<td>Were clear conclusions presented?</td>
<td>/5</td>
</tr>
<tr>
<td>Did the conclusions reflect the aims and supported by the data?</td>
<td>/5</td>
</tr>
<tr>
<td>Was a bibliography included?</td>
<td>/5</td>
</tr>
</tbody>
</table>
Assessment 2: Notebook marking criteria (marked out of 100)

1. Project task management (20 marks)
   - Evidence of regular updates (10 marks)
   - Documentation of tasks completed over time and how tasks were prioritised to meet deadlines (10 marks).

2. Meeting notes (15 marks) – detailed meeting notes including sub-team meetings as appropriate.

3. Technical detail (30 marks)
   - Evidence of the technical details of the design process recorded using diagrams, graphs, code, blueprints, etc. (15 marks)
   - References and resources used fully cited (5 marks)
   - Team efforts clearly distinguished from individual contributions (10 marks)

4. Reflections (10 marks) – periodic reflections on directions, progress and outcomes of decisions.

5. Usability (25 marks)
   - Well organised work that is written in a professional tone (5 marks)
   - A complete resource with details recorded in enough detail and in an easy to follow manner (5 marks)
   - Future team members would be able to continue with the research (15 marks)

Assessment 3: Part A – Self-reflection marking criteria (marked out of 25)

You will be assessed on your ability to demonstrate considered reflection on your current progress and how you will improve in the future according to the rubric below:

<table>
<thead>
<tr>
<th>Criterion</th>
<th>High performance (4-5 marks)</th>
<th>Satisfactory (2-3 marks)</th>
<th>Un-satisfactory (0-1 marks)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Strengths</td>
<td>Comprehensive detail into current strengths in self-progress to the intended deliverables.</td>
<td>Some detail of current strengths or strengths are somewhat unrealistic.</td>
<td>Strengths not clearly identified or wholly unrealistic/irrelevant.</td>
</tr>
<tr>
<td>Weaknesses</td>
<td>Comprehensive detail into current weakness in self-progress to the intended deliverables.</td>
<td>Some detail of current weakness or weaknesses are somewhat unrealistic.</td>
<td>Weaknesses not clearly identified or wholly unrealistic/irrelevant.</td>
</tr>
<tr>
<td>Opportunities</td>
<td>Well thought out detail about current opportunities for changing work practices to achieve set individual and team deliverables. Elaborates on a realistic plan for achieving suggested changes.</td>
<td>Comprehensive and realistic ideas for current opportunities for changing work practices to achieve individual and team deliverables. Unclear plan for what to improve.</td>
<td>Lacking in a clear idea of opportunities for self-improvement or wholly unrealistic/irrelevant.</td>
</tr>
<tr>
<td>Threats</td>
<td>Well thought out detail about current threats to achieving set individual</td>
<td>Comprehensive and realistic ideas for current threats to achieving</td>
<td>Lacking clear ideas of threats to achieving</td>
</tr>
<tr>
<td>Criterion</td>
<td>High performance (4-5 marks)</td>
<td>Satisfactory (2-3 marks)</td>
<td>Un-satisfactory (0-1 marks)</td>
</tr>
<tr>
<td>-----------</td>
<td>-----------------------------</td>
<td>--------------------------</td>
<td>-----------------------------</td>
</tr>
<tr>
<td>and team deliverables. Elaborates on a realistic plan for negating potential threats.</td>
<td>individual and team deliverables. Unclear plan for what to do to negate potential threats.</td>
<td>deliverables or wholly unrealistic/irrelevant.</td>
<td></td>
</tr>
<tr>
<td>Writing</td>
<td>Work is free of grammatical, punctuation and spelling errors</td>
<td>Work has minor of grammatical, punctuation and/or spelling errors</td>
<td>Many grammatical, punctuation and/or spelling errors.</td>
</tr>
</tbody>
</table>

**Assessment 3: Part B Team evaluation marking criteria**

Grades for this evaluation will be calculated based on the normalised mark from the evaluations of you given by your peers. For more detail on the scoring algorithm visit: [http://webpapproject.lboro.ac.uk/academic-guidance/a-worked-example-of-the-scoring-algorithm/](http://webpapproject.lboro.ac.uk/academic-guidance/a-worked-example-of-the-scoring-algorithm/)

**Assessment 4: technical marking criteria**

The marking rubric/guidelines for this component will be determined in consultation with your project coordinator.
5.4 Submission of assessment tasks

All written work will be submitted for assessment via Moodle unless otherwise specified. If you are unable to submit the work via Moodle, you should email the work to the project coordinator as soon as possible. The time the email is received will be considered the submission time. If the final is too big to email, you can share it via your UNSW OneDrive.

Some assessments will require you to complete the work online and it may be difficult for the course coordinator to intervene in the system after the due date. You should ensure that you are familiar with assessment systems well before the due date. If you do this, you will have time to get assistance before the assessment closes.

When you submit work through Moodle for assessment you are assumed to be assenting to the standard plagiarism declaration. A copy of the plagiarism declaration is available from this course’s Moodle page. You should not include a plagiarism declaration with your submissions as it will lead to false positives in the plagiarism detection system.

Late penalty

Submissions received after the due date and time will be penalised at a rate of 10% per day or part thereof.

5.5 Feedback on assessment

Feedback on your progress is integral to the design process and will be provided throughout the course from your project coordinator/s and your team members. To ensure you receive the greatest benefit from this feedback it is important that you solicit feedback from others, including your peers, and that you act on the feedback regularly. The feedback you will receive includes, but is not limited to, weekly team meetings, peer feedback as part of your team evaluation, feedback on your self-reflections, regular feedback on your thoughts recorded in your notebook, and feedback from your project coordinator for your communication and technical assessment. We encourage you to seek regular feedback throughout this course to make the most out of this course.

6. Academic integrity, referencing and plagiarism

Referencing is a way of acknowledging the sources of information that you use to research your assignments. You need to provide a reference whenever you draw on someone else’s words, ideas or research. Not referencing other people’s work can constitute plagiarism.

Further information about referencing styles can be located at https://student.unsw.edu.au/referencing

Your referencing should be complete, and consistent. Consult your supervisor on her or his preferred referencing style (and the reasons why it is preferred!)

Academic integrity is fundamental to success at university. Academic integrity can be defined as a commitment to six fundamental values in academic pursuits: honesty, trust, fairness, respect, responsibility and courage1. At UNSW, this means that your work must be your own, and others’ ideas should be appropriately acknowledged. If you don’t follow these rules, plagiarism may be detected in your work.

Further information about academic integrity and plagiarism can be located at:

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• The Current Students site https://student.unsw.edu.au/plagiarism, and
• The ELISE training site http://subjectguides.library.unsw.edu.au/elise

The Conduct and Integrity Unit provides further resources to assist you to understand your conduct obligations as a student: https://student.unsw.edu.au/conduct.

7. Readings and resources

There are no set text books for this course. Any required readings/resources for the professional workshop series will be provided as you are doing them. Your team will also have shared resources that you are also responsible in contributing to.

To explore the engineering design process in more detail, you are welcome to read this text:

Dym, Clive L., Engineering Design A Project Based Introduction.

8. Administrative matters

For enrolment and other administrative matters, please see the Engineering Student Support Services at The Nucleus: Student Hub. The office is on Level 2, Main Library, Kensington Campus and may be contacted on +61 2 9385 8100 or via http://unsw.to/webforms.

For course administration matters, please contact the Course Authority.

9. Additional support for students

• The Current Students Gateway: https://student.unsw.edu.au/
• Academic Skills and Support: https://student.unsw.edu.au/academic-skills/
• Student Wellbeing, Health and Safety: https://student.unsw.edu.au/wellbeing/
• Disability Support Services: https://student.unsw.edu.au/disability-services/
• UNSW IT Service Centre: https://www.it.unsw.edu.au/students/index.html