

Faculty of Engineering

# **ENGG2600 Vertically Integrated Projects**

Course Outline

2022

# Contents

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## 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.

Revision	Date	Changes
0	31/01/22	Initial version



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## 2. Course information

Units of credit: This is a 6 unit of credit (UoC) course that runs across the year as 2 credit points per 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.

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 42 UoC by the start of the VIP program
2. Must be in good academic standing
3. Students not from Engineering can enrol in ENGG2600 as a General Education Elective

Weekly team meetings during term time will be organised directly within your VIP team.

## 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. You will also experience leadership, project management and presentation skills thus giving you 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 completion, which enables students to extend their research and project-based learning experience beyond a single term.

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 engage with industry partners.

Under the guidance of academics and mentors, this course provides a vehicle for guided but independent group project work on challenging and unique briefs. The learning and effort in the course are largely team-based, with team-members ideally being drawn from different discipline areas to promote diverse teams with unique mixes of skills that each member can contribute. 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 intriguing projects.

ENGG2600 is the first course in a "vertical" series of research and project-based learning courses, with ENGG3600 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 through the VIP series of courses.

## 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 tma2tei0a 681.7y04994(ap)-609(lf







## **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 **forms 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

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This course consists of a minimum of 1-hour weekly meeting or as agreed 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.

Time/location	Activity/session	Related CLO
<b>Term 1</b>		
<b>0 week</b>	<b>Welcome and info session (2 h)</b> Welcome to the program and overview on the course structure and other info regarding VIP.	N/A
<b>Week 9</b>	<b>Progress Review 1 (20%)</b> You will be marked on the progress and given feedback on your current progress.	1-7
<b>Term 2</b>		
<b>Week 9</b>	<b>Progress Review 2 (20%)</b> You will be marked on the progress and given feedback on your current progress.	1-7
<b>Term 3</b>		

**Week 1-4 Confidence in Presenting Stage 1 (beginners) and Stage 2 (advanced)**

**Confident Presenting – Stage 1**

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



## 5. Assessment

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### 5.1 Assessment tasks

The three assessment tasks in the VIP course for the entire year have been designed to allow you to demonstrate your ability to meet the course learning outcomes. These assessments will be based on your progress over the year and assessed based on progress, contribution, and technical output. Your final marks will be determined based on the culmination of all three terms.

For more details of assessment, generic assessment rubrics, and assessment criteria and standards see Section 5.2.

#### **Assessment 1: Progress Review 1 (20%)**

This assessment task will be in an oral and/or written format and agreed upon in consultation with your project coordinator. You will be assessed based on your progress against milestones (15%) and your contributions to the project (5%) for T1.

#### **Assessment 2: Progress Review 2 (20%)**

Same as the first assignment, this assessment task will be in an oral and/or written format and agreed upon in consultation with your project coordinator. You will be assessed based on your progress against milestones (15%) and your contributions to the project (5%) for T2.

#### **Assessment 3: Progress Review 3 (60%)**

A key part of your learning in this course will be the outputs of the research work that you will undertake







<p>Communication</p> <p>Presenting and/or</p> <p>Support to audience</p> <p>How well it is</p> <p>communicated)</p>	<ul style="list-style-type: none"> <li>x The presentation follows a clear and logical structure.</li> <li>x Presenter speaks with clarity and in an engaging way.</li> <li>x Presenter delivers in a relaxed, confident manner and uses eye contact and body language.</li> <li>x Presenter makes good use of well-designed visual aids.</li> <li>x Presenter uses relevant high-quality images and graphs that enhance the presentation.</li> </ul>	<p>Exceptional communication skills.</p>	<p>Superior communication skills.</p>	<p>Good communication skills.</p>	<p>Satisfactory communication skills.</p>	<p>Unsatisfactory communication skills.</p>
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CONTRIBUTION		HD	D	CR	PS	FL
<p>Regular contribution to</p> <p>meetings</p> <p>Response to given feedback</p> <p>Meeting project team</p> <p>Objectives</p>	<ul style="list-style-type: none"> <li>x The student shows great evidence of regular updates about the project.</li> <li>x There is evidence of detailed team meeting notes.</li> <li>x The student regularly contributes to team meetings and class feedback sessions.</li> </ul>	<p>An outstanding level of performance.</p>	<p>A superior level of performance.</p>	<p>A good level of performance.</p>		

Grade	Performance
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### **5.3 Optional Assessment criteria and standards for pitching/report writing**

## Rubric for a poster presentation

### Aspect 1: Layout and Design

Criteria	Grade
Was the poster eye-catching / visually attractive? (colour schemes, images, ...)	
Was the poster layout clean and logical? (not too crowded, ...)	
Was the poster easily readable? (Font size, style, ...)	

## Rubric for report writing

(Note: Adopted from thesis writing rubric)

Criteria	Task	Grade	Pages
Literature review	<p>(What is the problem to be solved, and its significance?)</p> <ul style="list-style-type: none"> <li>• Brief background to project</li> <li>• Summary of literature relevant to project</li> <li>• Identification of “gaps” in the literature</li> </ul>		
Research question and project plan	<p>(How will the student answer the research question in the given time using their available resources?)</p> <ul style="list-style-type: none"> <li>• Research question</li> <li>• Hypothesis and aims</li> <li>• Proposed Solution/Experimental Methodology</li> <li>• Thesis timeline – for next two term</li> <li>• Justification of time allocation for each task</li> <li>• Available resources identified</li> <li>• Required training and upskilling identified</li> </ul>		
Project dependant preparation	<p>(Can the student achieve the aims in the timeline? What progress has been made already?)</p> <p>Project specific, but may include:</p> <ul style="list-style-type: none"> <li>• Evidence of training on specific equipment</li> <li>• Evidence of some upskilling in new software/methods</li> <li>• Preliminary results</li> <li>• Preliminary sketches</li> <li>• Components/parts ordered</li> <li>• Detailed budget of parts to be ordered</li> <li>• Risk Assessment</li> </ul>		
Document presentation	<ul style="list-style-type: none"> <li>• Report or slide structure and layout</li> <li>• English skills – spelling, grammar</li> <li>• Data presentation (if applicable)</li> <li>• Clarity of writing</li> <li>• Citations consistent and correctly formatted</li> </ul>		



- x The *Current Students* site <https://student.unsw.edu.au/plagiarism>, and
- x The *ELISE* training site <http://subjectguides.library.unsw.edu.au/elise>

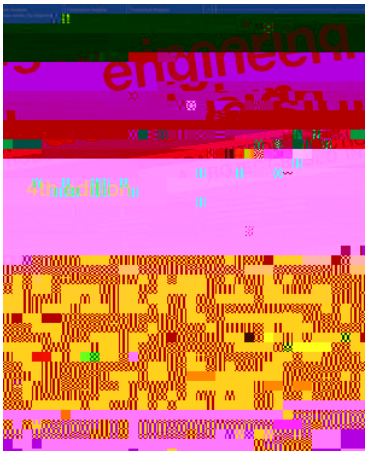
The *Conduct and Integrity Unit* provides further resources to assist you to understand your conduct obligations as a student: <https://student.unsw.edu.au/conduct>.

## 7. Readings and resources

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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

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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

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