



1. General Course Information

1.1 Course Details

| | |
|----------------------------|---------------------------------|
| Course Code: | 1007ENG |
| Course Name: | Engineering Fundamentals |
| Trimester: | Trimester 2, 2022 |
| Program: | Diploma of Engineering |
| Credit Points: | 10 |
| Course Coordinator: | Dr Andrew Wixted |
| Document modified: | 7th June 2022 |

Course Description

This course provides students with core professional empowering skills required to complete their engineering degree, gain work experience and begin their engineering careers. The course is taught through using several modes including Problem-, Project- and Experiential-Based Learning. Students learn by undertaking a design project using commercial methods and practices. The course provides basic techniques in the use of CAD software for preparation of drawings needed for their project. Oral and written communications also form major components of the course. The course also contains generic skills required for tertiary study of engineering including engineering ethics, sustainability, and engineering design theory. The course is intended to equip students with the generic Engineering skills and professional responsibility to others that should be integral to their university studies and later professional practice.

Assumed Knowledge

There are no prerequisites for this subject.

1.2 Teaching Team

Your teacher/s can be contacted via email as below:

You will also find their email in the Teacher's tile on your Course Site.

| Name | Email |
|------------------|--|
| Dr Andrew Wixted | andrew.wixted@staff.griffithcollege.edu.au |

1.3 Meet with your teacher

Your teacher is available each week to meet outside of normal class times. This is called consultation. Times that your teacher will be available for consultation will be found on the Teacher's tile on your Course Site.

1.4 Timetable

Your timetable is available on the Griffith College Digital Campus at My Apps, Timetable.

1.5 Technical Specifications

All students must have access to a computer or suitable mobile device such as desktop, laptop, or tablet. In addition, up-to-date browser access, a reliable high-speed internet connection with enough upload and download capacity, a webcam and headset including microphone are needed.

2. Aims, Outcomes & Generic Skills

2.1 Course Aims

This course within the Diploma of Engineering aims to assist students in preparing for university study and to place their study in the context of what it means to be a professional engineer.

This course focuses on developing student knowledge and skills in the areas of engineering design practice, professional ethics and communication skills. It also aims to highlight the need for professional communication in multidisciplinary teams, developing student ability to communicate verbally and in writing.

The course also aims to ensure students are competent in the operation of software essential in later courses within the program.



2.2 Learning Outcomes

After successfully completing this course you should be able to:

1. Describe the multi-faceted role of the professional engineer in society.
2. Explain the ethical and moral obligations of professional engineers to act in an environmentally, socially and economically responsible manner.
3. Demonstrate the skills required to communicate effectively in a professional manner both in written and oral form.
4. Apply basic project management skills and tools within a team project.
5. Analyse team effectiveness and prepare recommendations for enhancing team performance.
6. Prepare engineering drawings using basic CAD functionality.



2.3 Generic Skills and Capabilities

For further details on the Generic Skills please refer to the [Graduate Generic Skills and Capabilities policy](#).

Griffith College aims to develop graduates who have an open and critical approach to learning and a capacity for lifelong learning. Through engagement in their studies, students are provided with opportunities to begin the development of these and other generic skills.

Studies in this course will give you opportunities to begin to develop the following skills:

| Generic Skills and Capabilities | | Taught | Practised | Assessed |
|--|--|--------|-----------|----------|
| Acquisition of discipline knowledge and skills with critical judgement | | ✓ | ✓ | ✓ |
| Communication and collaboration | | ✓ | ✓ | ✓ |
| Self-directed and active learning | | ✓ | ✓ | ✓ |
| Creative and future thinking | | ✓ | ✓ | ✓ |
| Social responsibility and ethical awareness | | ✓ | ✓ | ✓ |
| Cultural competence and awareness in a culturally diverse environment | | ✓ | ✓ | |



3. Learning Resources

3.1 Required Learning Resources

Dowling, D., Carew, A., & Hadgraft, R., et.al. (2019) **Engineering your future: an Australasian Guide**, (4th ed.), Milton, Qld., John Wiley & Sons.

Note: A number of copies of this text, or earlier editions, may be available from the University library.

3.2 Recommended Learning Resources

Kosky.P., Wise.G., Balmer.R., Keat.W (2010) Exploring Engineering: An Introduction to Engineering & Design (2nd ed.) Sydney: Elsevier•

Fowler.J., Guddmundsson.A., Whicker.L (2011) groups work! A guide for working in groups (2nd ed.). Palmer Higgs Books Online

Portny, S.E., (2017) Project Management All-in-One For Dummies, (5th Edn), John Wiley & Sons

3.3 College Support Services and Learning Resources

Griffith College provides many facilities and support services to assist students in their studies. Links to information about support resources that are available to students are included below for easy reference.

- [Digital Library](#) – Databases to which Griffith College students have access to through the Griffith Library Databases.
- [Study Toolbox](#) – there is a dedicated website for this course on the Griffith College Digital Campus.
- Academic Integrity - Griffith College is committed to ensuring academic integrity is understood and maintained by all staff and students. All students learn about academic integrity through engagement with Academic Integrity online modules within the Academic and Professional Studies course.
- [Services and Support](#) provides a range of services to support students throughout their studies including academic advice and assignment help from Student Learning Advisors, and personal and welfare support from Student Counsellors.
- [Jobs and Employment](#) in the Student Hub can assist students with career direction, resume and interview preparation, job search tips, and more.
- [IT Support](#) provides details of accessing support, information on s numbers and internet access and computer lab rules.

3.4 Other Information about your Learning

Preparation and Participation in Learning

You need to prepare before attending your scheduled learning experience. Work through the learning content prepared by your teacher which is found on the course site. Make sure you complete the learning activities set each week, they are designed to support your learning. Active participation in your learning will enhance your success. Ask questions when something is unclear or when you want to bring some issue to your teacher's attention; respond to questions to test your knowledge and engage in discussion to help yourself and others learn.

Attendance

You are expected to actively engage in all learning experiences which underpin the learning content in this course. You are expected to engage with the learning content and learning activities outside of timetabled class times. This requires you to be an active agent of your learning. You are expected to bring all necessary learning resources to class such as the required textbook and /or Workbook. In addition, you are encouraged to BYOD (bring your own device) to class such as a laptop or tablet. This is not a requirement as computer lab facilities are available on campus, however, the use of such devices in the classroom is encouraged with appropriate and considerate use principles being a priority.

Consultation Sessions

Teachers offer extra time each week to assist students outside the classroom. This is known as 'consultation time.' You may seek assistance from your teacher on email or in person according to how the teacher has explained this to the class. Attendance during consultation time is optional but you are encouraged to use this extra help to improve your learning outcomes.

Course Learning Materials

Learning materials are made available to you in the course site. The learning materials are arranged in Modules. In each Module you will find Learning Content, Learning Experiences and Learning Activities. **Learning Content** will be engaged with prior to the scheduled **Learning Experience (your weekly class)**. This will ensure you are prepared for the scheduled Learning Experience by being aware of the content to be covered and therefore will be able to actively participate in the session. **Learning Activities** are accessed after the scheduled session for purposes of review, consolidation of learning, and preparation for the Evidence of Learning Tasks in the course.

In addition, **Anytime Anywhere** learning material is provided in the course. This learning material provides support, interactive tools and directions for students who occasionally cannot attend the weekly scheduled Learning Experience (either in person or on Zoom) perhaps due to illness or other commitments. The Anytime Anywhere learning material should also be used in conjunction with Learning Content and Learning Activities resources.

Self-Directed Learning

You will be expected to learn independently. This means you must organise and engage with the course learning content even when you are not specifically asked to do so by your teacher. The weekly guide will be helpful to organise your learning. This involves revising the weekly course learning material and completing the learning activities. It also means you will need to find additional information to evidence your learning beyond that given to you, and to construct your own response to a question or topic. All of this requires careful planning of your time. Expect to spend, on average, at least 10 hours per week including class time for each of your courses.

Program Progression

You are reminded that satisfactory Program Progression requires that attendance in classes is maintained at equal to or greater than 80%, students are engaged in their learning and that GPA is maintained at equal to or greater than 3.5 [please see Griffith College Policy Library - [Program Progression Policy](#) - for more information].






Teacher and Course Evaluation

Your feedback is respected and valued by your teachers. You are encouraged to provide your thoughts on the course and teaching, both positive and critical, directly to your teacher or by completing course and teacher evaluations via Griffith College's evaluation tool whenever these are available.



4. Learning Content, Learning Experiences and Learning Activities

4.1. Modules for Learning and Weekly Learning Content, Learning Experiences and Learning Activities

| | Learning Content | Learning experiences | Learning activities | Evidence of learning | Learning outcome |
|-------------------------------------|---|---|--|---|---|
| |  |  |  |  |  |
| Module 1: Project Initiation | | | | | |
| 1 | Course Introduction Introduction to Engineering | Discussion of core activities. Problem Solving Reflective Practice | Developing problem solving & reflective practice. | "Writing Skills" | 1,2,3 |
| 2 | The Engineering Method | Discuss content questions. Team Meeting (with Mentoring) (TMM) | Mind maps Initial team meetings Requirements analysis Project management plan (PMP) initiation. | | 1,2,4 |
| 3 | Project Management | Discuss content questions & application to project. Using PM tools (WBS/Gantt/Risk Mgmt etc) | Team Meeting with minute taking (TM) Finishing project setup | "Writing Skills" | 3,4,5 |
| Module 2: Project Planning | | | | | |

| | | | | | |
|------------------------------------|--|---|--|--|---------|
| 4 | Engineering Drawing & CAD | Discuss content questions & application to project. CAD walkthrough TMM | Sketching/CAD TM with monitoring & control WBS/Gantt | Project Initiation | 3,6 |
| 5 | Enabling Skills Engineering Communications | Discuss content questions & application to project. Document Creation TMM | Sketching/CAD TM with project monitoring & control | Project Presentation | 1,2,3 |
| 6 | Problem Solving Information Skills | Discuss content questions & application to project. TMM | CAD TM with project monitoring & control | Individual Project Designs | 2,3,6 |
| Module 3: Project Execution | | | | | |
| 7 | Engineering Design 1 | Discuss content questions & application to project. TMM | TM with project monitoring & control | Project Planning | 2,3,4 |
| 8 | Engineering Design 2 | Discuss content questions & application to project. TMM | TM with project monitoring & control | Project Presentation | 4,5 |
| 9 | CAD/CAM Rapid Prototyping | Discuss content questions & application to project. TMM | TM with project monitoring & control | Project Presentation | 3,5,6 |
| Module 4: Project Closure | | | | | |
| 10 | Systems Engineering | Discuss content questions & application to project. Problem Solving Reflective Practice | Preparing Project Defence TM with project monitoring & control | "Writing Skills" Project Design | 3,6 |
| 11 | Sustainable Engineering & Ethical Practice | Discuss content questions & application to project. TMM | Preparing Project Closure report TM with project monitoring & control | Project Defence | 2,3,6 |
| 12 | Engineering Futures | Reviewing new fields of engineering | Final TMs | Project Closure Presentation Project Report | 1,2,5,6 |



5. Evidence of Learning

5.1 Evidence of Learning Summary

| | Evidence of learning | Weighting | Learning outcome | Due Date |
|---|-----------------------|-----------|------------------|--|
| | | | | |
| 1 | Writing Skills (3x3%) | 9% | 3, 5 | Week 1, 3, 10 |
| 2 | Project Presentations | 6% | 3, 4, 5, 6 | 5, 8, 9, 12 (25% of class each session) |
| 3 | Project Designs | 15% | 3, 6 | 6, 10, 11 |
| 4 | Project Reporting | 35% | 2, 3, 4, 5, 6 | 4, 7, 12 |
| 5 | Final Exam | 35% | 1, 2, 3, 4, 5, 6 | Final Exam Week |

5.2 Evidence of Learning Task Detail

1. Evidence of Learning Task 1: Writing Skills (9%)

Task Type: Writing skills incorporating problem solving & reflection

Due Date: Week 1 (3%) **AND** Week 3 (3%) **AND** Week 10 (3%)

Weight: 9%, Marked out of 9

Task Description: Three short **in-class** “writing exercises” are required for Writing Skills assessment. The three short writing exercises are worth 3% each for a total of 9% of the final trimester mark. Students will write using a specific given problem-solving methodology on a topic as detailed by the class tutor. The sequence of the three exercises will assist students in developing Problem Solving and Reflective Practice. This is an individual submission.

Criteria & Marking: See “Assessment” in “Writing Skills Resources” in course site.

Submission: Turnitin via the course site.

2. Evidence of Learning Task 2: Design Project Progress Individual Presentation (6%)

Task Type: Presentation

Due Date: Week 5 **OR** Week 8 **OR** Week 9 **OR** Week 12

Weight: 6%, Marked out of 6

Task Description: The project (item 4 below) involves you working together with other students as a team. As your project progresses, you will be required to report to the class on your team progress using presentation software (e.g., PowerPoint, Impress etc) to guide the audience through the presentation. A 1-to-2-page executive summary, at least 11 PowerPoint slides and a minimum five [5] minute talk will be required from each student for assessment worth 6% of the final trimester marks. A copy of the presentation and any handouts are to be presented to the tutor **BEFORE** the presentation begins. Each team member will have an opportunity to present in one of the four tutorial classes reserved for presentations. The schedule is to be coordinated by the team. This is an individual submission within the context of the group project.

Criteria and Marking: See “Project Assessment” in “Project Resources” in course site.

Submission: In person or via video recording.

3. Evidence of Learning Task 3: Project Designs (15%)

Task Type: Conceptual Designs, Preliminary Designs and Design Defence Group Presentation

Due Date: Weeks 6, 10 AND 11

Weight: 15%, Marked out of 15

Task Description: Design Project

Students individually create and document, using Computer Aided Design (CAD) software, a conceptual design meeting the requirements of the set project (5%). They later take their design and document it in an academic paper (5%). Within the team, and as part of Task-4 below, the designs are evaluated against the criteria and from that a team design is developed. A design project performance competition will be held in Week 11 to assess team achievements and learning outcomes. This is a group submission and is typically a presentation to the client of 20 to 30 minutes duration (team of 4) (5%).

Criteria and Marking: See "Project Assessment" in "Project Resources" in the course site.

Submission: In person or via video recording.

4. Evidence of Learning Task 4: Design Project Reporting (35%)

Task Type: Project Management team documents

Due Dates: Weeks 4, 7 AND 12

Weight: 35%, Marked out of 35

Task Description: Design Project Reporting

The project is a team exercise with some individual assessment (see Tasks 2 & 3 above). The Design Project will become a professional comprehensive written report, which will include a critique on the chosen design and the strengths of your project, as well as on your team dynamics and team and peer assessments. Peer assessments of individual contributions are also collected, and peer assessment factors are applied to determine an individual team member's Design Project results. The Design Projects must be available for inspection by your tutor upon request in Weeks 3-11. Details and specifications for the Design Project will be provided by your lecturer.

A professional report that follows the layout of the supplied template is required. The use of a word processor is mandatory. Reports that do not comply with this format will not be accepted. The report will not be marked and will attract the specified late penalty until a correctly formatted report is submitted.

The Project Management aspect of the Design Project is partitioned into 3 phases for assessment purposes including: Project Concept Planning (due Week 4), Project Management Planning (due Week 7) and the final Project File which includes: all Project Planning, Project Closure Reports, all Design File/s and every team and individual artifact created as part of the project (due week 12) The sections will be submitted both as a softcopy by Friday midnight in the week due.. This is a group submission. Contribution to the teamwork assessed through peer assessment and individual project workbooks will affect final individual marks.

Criteria and Marking: See "Project Assessment" in "Project Resources" in course site.

Submission: Turnitin via the course site or as otherwise directed.

5. Evidence of Learning Task 5: Final Exam (35%)

Task Type: Online Exam

Due Dates: As per the advertised exam timetable.

Weight: 35%, Marked out of 70

Length: 3 hours

Task Description: The final examination will be an open book exam covering all aspects of the lecture series and consists of both multiple choice and short answer questions. Students must have their camera turned on for the duration of the exam.

Criteria & Marking: N/A

Submission: Online exam via the course site.

In order to pass this Course, students must:

- A. demonstrate assurance of learning of all learning outcomes through graded Evidence of Learning Tasks.**
- B. Attempt/submit the Final Online Examination.**

5.3 Late Submission

An Evidence of Learning Task submitted after the due date, without an approved extension from the teacher, will be penalised. The standard penalty is the reduction of the mark allocated to the Evidence of Learning Task by 5% of the maximum mark applicable for the Evidence of Learning Task, for each working day or part working day that the task is late. Evidence of learning tasks submitted more than five working days after the due date are awarded zero marks.

Please refer to the Griffith College website - Policy Library > [Assessment Policy](#) for guidelines and penalties for late submission.

5.4 Other Information about Evidence of Learning

Retention of Originals

You must be able to produce a copy of all work submitted if so requested. Copies should be retained until after the release of final results for the Course.

Requests for extension

To apply for an extension of time for an evidence of learning task, you must submit an [Application for Extension of Assignment](#) form to your teacher at least 24 hours before the date the assignment is due. Grounds for extensions are usually: serious illness, accident, disability, bereavement or other compassionate circumstances and must be able to be substantiated with relevant documentation [e.g. [Griffith College Student Medical Certificate](#)]. Please refer to the Griffith College website – [Policy Library](#) for guidelines regarding extensions and deferred Evidence of Learning Tasks.

Return of Evidence of Learning Tasks

1. Marks awarded for in-trimester evidence of learning tasks, except those being moderated externally with Griffith University, will be available on the course site within fourteen [14] days of the due date. This does not apply to the final evidence of learning task in this course (marks for this task will be provided with the final course result).
2. Students will be advised of their final grade through the Digital Campus. Students can review their final exam papers after student grades have been published. Review of final exam papers will not be permitted after the final date to enrol.
3. Marks for **all** evidence of learning tasks including the final exam (if applicable) will be recorded in the Course Site and made available to students through the Course Site.

The sum of your marks of evidence of learning tasks in this course does not necessarily imply your final grade for the course. Standard grade cut off scores can be varied for particular courses, so you need to wait for the official release of grades to be sure of your grade for this course.

6. Policies & Guidelines

Griffith College Evidence of Learning Tasks-related policies can be found in the [Griffith College Policy Library](#) which include the following policies:

[Assessment Policy](#), [Special Consideration](#), [Deferred Assessment](#), [Alternate Exam Sitings](#), [Medical Certificates](#), [Academic Integrity](#), [Finalisation of Results](#), [Review of Marks](#), [Moderation of Assessment](#), [Turn-it-in Software Use](#). These policies can be accessed within the [Policy Library](#)

Academic Integrity Griffith College is committed to maintaining high academic standards to protect the value of its qualifications. Academic integrity means acting with the values of honesty, trust, fairness, respect and responsibility in learning, teaching and research. It is important for students, teachers, researchers and all staff to act in an honest way, be responsible for their actions, and show fairness in every part of their work. Academic integrity is important for an individual's and the College's reputation.

All staff and students of the College are responsible for academic integrity. As a student, you are expected to conduct your studies honestly, ethically and in accordance with accepted standards of academic conduct. Any form of academic conduct that is contrary to these standards is considered a breach of academic integrity and is unacceptable.

Some students deliberately breach academic integrity standards with intent to deceive. This conscious, pre-meditated form of cheating is considered to be one of the most serious forms of fraudulent academic behaviour, for which the College has zero tolerance and for which penalties, including exclusion from the College, will be applied.

However, Griffith College also recognises many students breach academic integrity standards without intent to deceive. In these cases, students may be required to undertake additional educational activities to remediate their behaviour and may also be provided appropriate advice by academic staff.

As you undertake your studies at Griffith College, your teachers and academic advisors will provide you with guidance to understand and maintain academic integrity; however, it is also your responsibility to seek out guidance if and when you are unsure about appropriate academic conduct.

In the case of an allegation of a breach of academic integrity being made against a student he or she may request the guidance and support of a Griffith College Student Learning Advisor or Student Counsellor.

Please ensure that you are familiar with the Griffith College Academic Integrity Policy; this policy provides an overview of some of the behaviours that are considered breaches of academic integrity, as well as the penalties and processes involved when a breach is identified.

For further information please refer to the Griffith College website - Policy Library > [Academic Integrity Policy](#)

Reasonable Adjustments for Evidence of Learning Tasks – The Disability Services policy

The [Disability Services policy](#) (accessed within the [Policy Library](#)) outlines the principles and processes that guide the College in making reasonable adjustments to Evidence of Learning Tasks for students with disabilities while maintaining academic robustness of its programs.

Risk Assessment Statement

There are no out of the ordinary risks associated with this course.

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Note: Griffith College acknowledges content derived from Griffith University in Diploma level courses, as applicable.