Course Code:	1007ENG
Course Name:	Engineering Fundamentals
Semester:	Trimester 2, 2017
Program:	Diploma of Engineering
Credit Points:	10
Course Coordinator:	PJ Wilson
Document modified:	21st June 2017

Teaching Team

Your lecturer/tutor can be contacted via the email system on the portal.

PJ Wilson: PJ.Wilson@staff.griffithcollege.edu.au

Staff Consultation

Your lecturer/tutor is available each week for consultation outside of normal class times. Times that your lecturer/tutor will be available for consultation will be given in the first week of lectures. A list of times and rooms will be published on the Griffith College Portal under the “myTimetable” link.

Prerequisites

There are no prerequisites for this course

Brief 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. Exposure to practicing engineers is a feature of this course.

Introduction

This course is designed to provide students with core enabling skills fundamental for use throughout their Engineering degree studies and future professional practice and development. This first year engineering common course aims to assist students prepare for university study, contextualize their learning throughout their degree program and to place their study in the context of what it means to be a professional engineer. It provides students with an engineering knowledge framework encompassing the engineering method, requirements engineering, design processes, engineering ethics & sustainability and career planning.

Students will work in teams on practical design tasks. The course is structured using experiential- and project-based learning, focusing on engineering practice for sustainability and various professional skills such as problem solving, design, project management, teamwork, and communications including team report writing and presentations. The course also aims to ensure students are competent in the operation of software essential in later courses within the engineering program.

Rationale

Engineers need to develop a variety of professional enabling skills important to being a successful practicing engineer. This course is designed to provide students with a core set of skills that will be used throughout their engineering degree studies and future professional practice and development. Students will work in teams on practical design tasks directly related to core engineering disciplines.

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.

Learning Outcomes

After successfully completing this course, you should be able to:

1. Identify and acquire the required skills to successfully undertake the program in which you are enrolled
2. Identify and describe the multi-faceted role of the professional engineer in society
3. Identify and describe the ethical and moral obligations of professional engineers to act in an environmentally, socially and economically responsible manner
4. Understand how this engineering program will provide access to knowledge and skills to become a professional engineer
5. Identify what is required to communicate effectively in a professional manner both in written and oral form
6. Effectively show written and oral communication skills and understand from staff and peer feedback, what areas you need to improve
7. Use basic CAD functionality competently.

Texts and Supporting Materials

Required texts and references

Students will be provided with readings via the Learning@Griffith College website throughout the semester, which can be accessed online or downloaded and printed by the students. In addition, students are strongly encouraged to purchase the following textbook for further reading:

- Dowling, D., Carew, A., & Hadgraft, R., (2014) Engineering your future : an Australasian guide ,(2nd ed.), Milton, Qld. : John Wiley & Sons

Note: Although the final exam is open book, no electronic devices can be taken into the exam. Therefore, the hardcopy version of the textbook may be a better option to purchase.
Note: A number of copies of this text will also be available from the Gold Coast Campus library.

Recommended texts and references

- 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

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Organisation and Teaching Strategies

The course content is delivered over the semester through 12 two hour lectures and 12 two hour tutorial/workshops sessions held on the Gold Coast and Mount Gravatt campuses.

In lectures you will be introduced to the essential areas of the course content. You will receive information about, and explanations of, the principal topics that are relevant to achieving the learning objectives of the course. Lectures are your opportunity to gain knowledge of important course content.

Tutorials/workshops will provide you with the opportunity to clarify your own ideas on the content material and apply them to your team project while developing teamwork and necessary problem solving skills, as well as written and oral communication skills.

Class Contact Summary

Attendance
To successfully achieve the course Learning Outcomes, each student will be required to attend the two hour lecture and a two hour tutorial session each week. Your attendance in class will be marked once during each of the two 2-hour classes. To receive full attendance, you must be present in the classroom on both occasions. Therefore, you are encouraged to attend and participate in all classes throughout the semester. You will also greatly advance your chances of success in the course by fully using the contact time you have available with your lecturers and tutors. In addition to that each week the lecturer is also available for individual consultation which is an opportunity for students who need extra assistance.

Tutorial Attendance
Attendance at tutorial sessions is compulsory, as satisfactory performance in the tutorial based design project, and the writing and presentation exercises, are a required condition for achieving a passing grade in this course. If you do not attend the tutorial sessions, you will not be able to submit the project reports or the design assignment for assessment.

Participation in Class
You are expected to actively participate in classes each week.

Course Materials
Lecture notes will be made available to you on the Learning@Griffith College site on the student portal and you are advised to print these out and bring them to each class so that extra notes can be added. Additional learning support material including self-paced learning guides and Youtube playlists are listed in the Resources section of the student portal.

Independent Learning
You are expected to reinforce your learning gained during contact time by undertaking sufficient independent study. For this 10 CP course, you will need to spend at least 10 hours per week engaged in activities that will help your learning and fulfill the course objectives. Thus, provided you have well used the 4 hours per week of formal contact, you would then complete at least 6 hours per week of independent study.

Consultant Times
Attendance during consultation times is optional but you are encouraged to use this extra help to improve your learning outcomes.

Program Progression
You are reminded that satisfactory Program Progression requires that attendance in classes is maintained at equal to or greater than 80% 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].. Experience indicates that students with less than 80% attendance are not likely to pass this course.

Content Schedule

Weekly Teaching Schedule

Week	Topic	Activity	Readings
1	Course Introduction Introduction to Engineering	Lecture	Ch 1 & Notes
	Writing skills 01	Tutorial	
2	The Engineering Method~~s~~	Lecture	Ch 2 & Notes
	Project Introduction	Tutorial	Notes & Resources
3	Project Management	Lecture	Ch 13 & Notes
	Writing skills 02	Tutorial	
4	Enabling Skills Engineering Communications	Lecture	Ch 4, 5, 6 & Notes
	Project: Project Concept Plan due	Tutorial	Notes

5	Engineering Drawing & CAD	Lecture	Lecture Notes
	Project: progress presentations	Tutorial	
6	Project Solving Information Skills	Lecture	Ch 8,9,10,11
	Project: Design concept CAD due	Tutorial	
7	Engineering Design 1	Lecture	Ch 8, 9, 10, 11 & Notes
	Project: Project Management Plan due	Tutorial	Notes
8	Engineering Design 2	Lecture	Ch 8, 9, 10, 11 & Notes
	Project: progress presentations	Tutorial	
9	CAD /CAM & Rapid Prototyping	Lecture	Lecture Notes
	Writing skills 03	Tutorial	
10	Systems Engineering	Lecture	Ch 7 & Notes
	Project progress presentations	Tutorial	
11	Ethics & Professional Responsibility	Lecture	Ch 3 & Notes
	Project: Design project testing	Tutorial	
12	Sustainable Engineering; Engineering Futures	Lecture	Ch 14
	Project Presentations Final Project File due	Tutorial	

Assessment

This section sets out the assessment requirements for this course.

Summary of Assessment

Item	Assessment Task	Weighting	Relevant Learning Outcomes	Due Date
1	Writing Skills	9%	1,4,5,6	1, 3, 9
2	Design Project Progress and Individual Presentations	6%	1,4,5,6,7	5, 8, 10, 12

3	Design Project Testing	15%	1,2,3,4	11
4	Design Project Reporting	35%	1,2,3,4,5,6,7	4,7,12
5	Final Exam	35%	2,3,4,5,7	Final Exam Block

Assessment Details

Item 1:
Writing Skills
Three short 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 1007ENG semester mark. Students will write on a topic related to Critical, Systems, Creative and Design thinking and Reflective Practice as detailed in the class by the tutor. Students are expected to use a technical writing methodology and format.

This is an individual submission.

Item 2:
Design Project Progress and Individual Presentations
The design project 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 PowerPoint slides to guide the audience through the presentation. A 1-2 page executive summary, at least 10 PowerPoint slides and a minimum five [5] minute talk will be required from each student for assessment worth 6% of the final 1007ENG marks. A hardcopy 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.

Item 3:
Design Project Testing
A design project performance competition will be held in Week 11 to assess team achievements and learning outcomes.
This is a group submission.

Item 4:
Design Project Reporting
The Design Project will become a comprehensive written report of up to 20,000 words (maximum) including 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 is required. The use of a word processor is mandatory. You will be required to use

* Times New Roman or Arial 12 pt font
* All four margins 20mm
* A4 page size
* Single or 1.15-1.25 line spacing
* Correct page orientation in a 3-4 ring binder

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 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: Project Plan and Design File/s (due week 12) The sections will be submitted both as a softcopy and as a hardcopy at the beginning of the project tutorial class in the week due.

This is both individual and group submission. Contribution to the teamwork assessed through peer assessment and individual project workbooks will affect final individual marks.

Item 5:
Final Exam
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.

Submission and Return of Assessment Items

Normally you will be able to collect your assignments in class within fourteen [14] days of the due date for submission of the assignment. Results for assessment items are also normally published online within fourteen [14] days of the due date.

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.

Extensions

To apply for an extension of time for an assignment, 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 Medical Certificate]. Please refer to the Griffith College website - Policy Library - for guidelines regarding extensions and deferred assessment.

Assessment Feedback

Marks awarded for assessment items will also be available on the on-line grades system on the Student Website within fourteen [14] days of the due date.

Generic Skills

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	Taught	Practised	Assessed
Written Communication	Yes	Yes	Yes
Oral Communication	Yes	Yes	Yes
Information Literacy	Yes	Yes	Yes
Secondary Research	Yes	Yes	Yes
Critical and Innovative Thinking	Yes	Yes	Yes
Academic Integrity	Yes	Yes	Yes
Self Directed Learning	Yes	Yes	Yes
Team Work	Yes	Yes	Yes
Cultural Intelligence	Yes	Yes	Yes
English Language Proficiency		Yes	Yes

Additional Course Generic Skills

Specific Skills	Taught	Practised	Assessed
Creativity & Innovation	Yes	Yes	Yes
Responsible, effective citizenship	Yes	Yes	Yes

Additional Course Information

Course Communication
You are instructed to regularly access and monitor any important announcements, timetable changes and dates regarding the course via the Griffith College Portal.

Teacher and Course Evaluations
Your feedback is respected and valued by your lecturers and tutors. You are encouraged to provide your thoughts on the course and teaching, both positive and critical, directly to your lecturer and tutor or by completing course and lecturer evaluations via Griffith College's online evaluation tool whenever these are available.

Students find this professional course "fun and interesting". In particular, they are enthusiastic about developing their knowledge and skills as future professional engineers through working on engineering design projects as a team. In response to students' constructive feedback regarding having four hours of classes back to back, the 2-hour lectures and 2-hour lab sessions are now held with a 1-hour break.

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 lecturers, tutors 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 a breach of academic integrity 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 Academic Integrity Policy on the Griffith College website – Policy Library.

Risk Assessment Statement

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

Note: For all Diploma level programs, Griffith College acknowledges content derived from Griffith University.