



Queensland, Australia

Course Code:	1007ENG
Course Name:	Engineering Fundamentals
Semester:	Semester 1, 2016
Program:	Diploma of Engineering
Credit Points:	10
Course Coordinator:	PJ Wilson
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Teaching Team

Your lecturer/tutor can be contacted via the email system on the portal.	
Name	Email
PJ Wilson	P.J.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 introduces students to the global goals of engineering practice with a strong emphasis on professionalism and ethics. It provides students with an engineering knowledge framework encompassing the History of Engineering, The Engineering Method, Problem Solving, Design, Sustainability, Engineering Ethics and Career Planning. It also develops student's generic skills required for tertiary study of Engineering and future professional practice.

The course is intended to equip students with the generic skills of the Griffith Graduate and professional responsibility to others that should be integral to their University studies and later professional practice. Exposure to practising 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. Engineers need a wide variety of skills to be a successful practising Engineer. This first year engineering common course aims to assist students prepare for university study 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 History of Engineering, The Engineering Method, Engineering Ethics, Sustainability and Career Planning. Students will work in teams on practical design tasks. The course is structured using project-based learning, focussing 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 skills pertinent to being a successful practising Engineer. This course is designed to provide students with basic set of fundamentals 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.

The course is structured around a number of modules, focussing on engineering practice for sustainability and various professional skills such as problems solving, teamwork, communications, including team report writing and presentations, and career planning.

Aims

This is a first semester course within the Diploma of Engineering which 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 students' knowledge and skills in the areas of engineering history, design practice, professional ethics and communication skills. It also aims to highlight the need for professional communication in multidisciplinary teams, developing students' 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 Microsoft Excel competently in future courses in your program
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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 must 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: 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 13 two hour lectures and 13 two hour tutorial sessions held on the Gold Coast and Mount Gravatt campus.

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.

Lectures 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. The contact time provided in lectures, tutorials/worksshops/laboratories is for your benefit; it is your opportunity to have any questions about course content or requirements clarified.

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%. Experience indicates that students with less than 80% 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: Excel for Engineering	Lecture	Ch 2 & Notes
	Project Introduction & Teaming	Tutorial	Notes & Resources
3	Project Management	Lecture	Ch 13 & Notes
	Writing skills 02	Tutorial	
4	Understanding Communication: Communicating Information	Lecture	Ch 5, 7 & Notes
	Project meetings (Strategic planning due)	Tutorial	
5	Self-Management: Enabling Skills	Lecture	Ch 4, 6
	Project Presentations & Meetings	Tutorial	
6	Project Solving Information Skills	Lecture	Ch 8,9,10,11
	Project meetings (concept CAD due)	Tutorial	
7	Engineering Design	Lecture	Ch 8, 9, 10, 11
	Project meetings (Tactical planning due)	Tutorial	
8	Systems Engineering	Lecture	Lecture Notes
	Project Presentations & Meetings	Tutorial	
9	Project Management	Lecture	Lecture Notes
	Writing skills 03	Tutorial	
10	Ethics & Professional Responsibility	Lecture	Ch 7 & Notes
	Project Presentations & Meetings	Tutorial	
11	Sustainable Engineering	Lecture	Ch 3 & Notes
	Project: Bridge Competition (held at Gold Coast Campus)	Tutorial	
12	Engineering Your Future	Lecture	Ch 14
	Project Presentations	Tutorial	
13	Revision	Lecture	Weeks 7-12 & Weeks 1-5

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 Individual Presentations	6%	1,4,5,6,7	5, 8, 10, 12
3	Design Project Competition (held at Gold Coast Campus)	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	14

Assessment Details

Item 1: Workbook

All students are to keep their own workbook in which they keep their own record of the individual project work that they do as part of the project team. The workbook will contain: project management information (meeting minutes, record of conversations, action items, etc), design development and personal performance and reflective practice notes.

The student workbooks will also be formatively assessed (for feedback and not marks) by your tutor. Your workbook must therefore be available for inspection upon request in Weeks 3-12.

Your workbook will be taken into consideration when applying the outcomes of the peer assessment process to determine your results for the team Project File.

This is an individual submission.

Item 2:

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 and the results are to be documented in the workbook.

This is an individual submission.

Item 3:

Team Project Progress Presentation

The design project involves you working together with other students as a team to construct a bridge over a given span. Construction of the bridge can be performed in tutorial time and the project will require your team to maintain a Project File (including Design File). Details and specifications for the bridge will be provided by your lecturer.

As your project progresses, you will be required to report to the class on your team's 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 team 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 4:

Team Project Competition

A design project performance competition event will be held at Gold Coast. Students located at Mt Gravatt will be transported by Griffith College to the Gold Coast campus.

This is a group submission.

Item 5:

Team Project Project File

The Project File 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 assessment. Peer assessments of individual contributions are also collected and peer assessment factors are applied to determine an individual team member's Project File results. Project Files are used by management to audit project progress and quality. It 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. 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 Project File is partitioned into Strategic, Tactical & Operation Planning and Management sections. The Strategic planning (due Week 4) and the Tactical planning (due Week 7) sections will be used for formative assessment to improve the work produced. 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. The complete final Project File must be submitted both as a softcopy and as a hardcopy at the **beginning** of the Week 12 project tutorial class.

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 6:

Final Exam

The final examination will be a closed book exam covering all aspects of the lecture series and consists of both multiple choice and short answer questions and a network diagram calculation.

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.

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.