



The University of Southern Queensland

## Course specification

The current and official versions of the course specifications are available on the web at <http://www.usq.edu.au/coursespecification/current>.  
Please consult the web for updates that may occur during the year.

### Description: Engineering Problem Solving 1

Subject	Cat-nbr	Class	Term	Mode	Units	Campus
ENG	1101	86285	1, 2009	ONC	1.00	Toowoomba

<b>Academic group:</b>	FOENS
<b>Academic org:</b>	FOENSV
<b>Student contribution band:</b>	2
<b>ASCED code:</b>	039999

## STAFFING

Examiner: Lyn Brodie  
Moderator: Mark Porter

## SYNOPSIS

This course introduces the student to some important engineering tools that will provide the basis for future work. The student will be introduced to the concept of a system and to the need for multidisciplinary teamwork in most engineering activities. Aspects of physical properties and conceptual designs are investigated and both these are applied to the analysis of complex real world projects. The course is presented as an initial introduction to problem based learning, and the use of virtual teamwork is emphasized throughout. All students are expected to contribute and to interact in a positive manner with other team members. This interaction is assessed. Students are expected to work both independently and as part of a team to provide solutions to projects which demonstrate use of appropriate technology and cultural sensitivity.

## OBJECTIVES

The course objectives define the student learning outcomes for a course. The assessment item(s) that may be used to assess student achievement of an objective are shown in parenthesis. On completion of this course, students should be able to:

1. co-operate in a virtual team working on real world engineering and surveying projects (Report 2 and Report 3);
2. establish appropriate strategies and protocols for using synchronous and asynchronous communication tools to effectively work in a virtual team (Report 1);
3. effectively use appropriate communication tools for working in a virtual team including chat, discussion boards and wikis (Report 1, Report 2 and Report 3)
4. identify the requirements for leadership in a successful virtual team (Report 1, Portfolio 1 and Portfolio 2);
5. apply an understanding of group dynamics appropriate to your team situation by negotiating, establishing and documenting roles and timelines for a given project or problem (Report 1, Report 2 and Report 3);
6. seek and evaluate the input of other team members (Report 1, Report 2 and Report 3);

7. apply prior knowledge and experience to assist in solving a problem as part of a virtual team, recognising the value of prior knowledge from team members with diverse backgrounds (Report 1, 2, 3, Portfolio 1, 2 and 3);
8. Identify a set of individual learning goals based on prior knowledge and experience; plan a strategy to meet these goals via self directed learning; evaluate and reflect on progress towards these goals (Portfolio 1 and 3)
9. identify and use appropriate scientific and mathematical techniques and procedures to explain phenomena encountered in the set range of problems and projects (Report 2 and Report 3);
10. Develop information literacy skills to find, analyse and evaluate appropriate information necessary to write a professional engineering report (Report 1, 2, 3 and Portfolio 1)
11. distinguish between "data" and "information" (Report 2 and Report 3);
12. communicate team results in a professional manner (Report 2, Report 3, Portfolio 1, 2 and 3);
13. use a computer for general communication and the production of technical reports (Report 1, 2, 3, Portfolio 1, 2 and 3);

## TOPICS

	Description	Weighting (%)
1.	<p>ENGINEERING AND PROBLEM SOLVING Solve/analyse a number of problems/systems as part of a team. Particular skills to be developed/enhanced will vary for each individual and may include the use of the computer as a tool for problem solving, research and presenting material in a professional manner; basic statistics applied to given or researched data; basic physics as a tool for understanding complex systems and an introduction to measurement. Specific topics may include:</p> <p>1.1. Windows Operating System.</p> <p>1.2. Computer Terminology.</p> <p>1.3. Spreadsheets and Wordprocessing.</p> <p>1.4. Synchronous and Asynchronous Communication Technology.</p> <p>1.5. Use of the WWW and Library facilities.</p> <p>1.6. Application of Fundamental Physics and Statistics to Real Work Engineering Projects.</p> <p>1.7. Introduction to Measurement and SI units.</p> <p>1.8. Project Management, Teamwork and Professional Communication applied to Virtual, Multidisciplinary Teams.</p> <p>1.9. Self Directed Learning to meet Individual Learning Goals.</p> <p>1.10. Physics of Pressure, Temperature, Flow.</p> <p>1.11. Graduate Attributes and Reflective Practice.</p>	100.00

## **TEXT and MATERIALS required to be PURCHASED or ACCESSED**

ALL textbooks and materials are available for purchase from USQ BOOKSHOP (unless otherwise stated). Orders may be placed via secure internet, free fax 1800642453, phone 07 46312742 (within Australia), or mail. Overseas students should fax +61 7 46311743, or phone +61 7 46312742. For costs, further details, and internet ordering, use the 'Textbook Search' facility at <http://bookshop.usq.edu.au> click 'Semester', then enter your 'Course Code' (no spaces).

*ENG1101 Engineering problem solving 1: external study package*, University of Southern Queensland, Toowoomba.

Students will need access to a computer for this course with the following facilities: access to the Internet and email on at least a weekly basis (access must be reliable); and Microsoft Office software or similar. Course resource page [www.usq.edu.au/course/material/eng1101](http://www.usq.edu.au/course/material/eng1101) (Students will need access to a computer for this course with the following facilities: access to the Internet and email on at least a weekly basis (access must be reliable); and Microsoft Office software or similar. Course resource page [www.usq.edu.au/course/material/eng1101](http://www.usq.edu.au/course/material/eng1101))

## **REFERENCE MATERIALS**

Reference materials are materials that, if accessed by students, may improve their knowledge and understanding of the material in the course and enrich their learning experience.

Eide, AR, Jenison, RD, Mashaw, LH & Northup, LL 2002, *Introduction to engineering problem solving*, 2nd edn, McGraw Hill, New York.

Gottfried, BS 2007, *Spreadsheet tools for engineers*, 3rd edn, McGraw Hill, New York.

Granlaw, R & Hepp, E 1999, *Introduction to the internet for engineers*, McGraw Hill, Boston.

Smith, KA & Imbrie, PK 2007, *Teamwork and project management*, 3rd edn, McGraw Hill, Boston.

## **STUDENT WORKLOAD REQUIREMENTS**

ACTIVITY	HOURS
Assessments	34.00
Lectures	2.00
Project Work	105.00
Team Meetings	14.00

## ASSESSMENT DETAILS

Description	Marks out of	Wtg (%)	Due date
PORTFOLIO PART 1	100.00	10.00	23 Mar 2009
TEAM REPORT 1	150.00	15.00	27 Mar 2009
TEAM REPORT 2	250.00	25.00	04 May 2009
PORTFOLIO PART 2	150.00	15.00	08 May 2009
TEAM REPORT 3	250.00	25.00	08 Jun 2009
PORTFOLIO PART 3	100.00	10.00	12 Jun 2009

## IMPORTANT ASSESSMENT INFORMATION

- Attendance requirements:**

This course employs a team-based approach to learning in which students must participate in small groups towards the solution of a number of technical problems. To meet the team based objectives of the course, students studying on-campus will have to participate in at least 80% of the scheduled activities and satisfactorily contribute to the team reports.
- Requirements for students to complete each assessment item satisfactorily:**

To satisfactorily complete an assessment item a student must achieve at least 50% of the marks or a grade of at least C-. Students do not have to satisfactorily complete each assessment item to be awarded a passing grade in this course. Refer to Statement 4 below for the requirements to receive a passing grade in this course.
- Penalties for late submission of required work:**
  - Team report and individual portfolios submitted after the due date will not be assessed.
  - Participation level of less than 30% as indicated on the team cover sheets may result in 0 marks for the individual student. Team Reports as listed in Assessment Details will consist of a DRAFT report and a FINAL report. The DRAFT report is due prior to the date listed. Teams should consult the course resource page <http://www.usq.edu.au/course/material/eng1101> for due dates of the draft. Dates listed in assessment details apply to the FINAL submission.
- Requirements for student to be awarded a passing grade in the course:**

To be assured of a passing grade, students must demonstrate, via the summative assessment items, that they have achieved the required minimum standards in relation to the objectives of the course by: (i) must contribute satisfactorily to all of the team reports and contribute to required postings on discussion boards. Contributions to team reports will be deemed satisfactory if a participation level of 30% or more is recorded on the team report cover sheet; and (ii) obtaining at least 50% of the total weighted marks available for all summative assessment items.
- Method used to combine assessment results to attain final grade:**

The final grades for students will be assigned on the basis of the weighted aggregate of the marks (or grades) obtained for each of the summative assessment items in the course.
- Examination information:**

There is no examination in this course.
- Examination period when Deferred/Supplementary examinations will be held:**

Not applicable.

- 8 University Regulations:  
Students should read USQ Regulations 5.1 Definitions, 5.6. Assessment, and 5.10 Academic Misconduct for further information and to avoid actions which might contravene University Regulations. These regulations can be found at the URL <http://www.usq.edu.au/corporateservices/calendar/part5.htm> or in the current USQ Handbook.

## **ASSESSMENT NOTES**

- 1 The due date for an assignment is the date by which a student must despatch the assignment to the USQ. The onus is on the student to provide proof of the despatch date, if requested by the Examiner.
- 2 Students must retain a copy of each item submitted for assessment. This must be despatched to USQ within 24 hours if required by the Examiner.
- 3 In accordance with University's Assignment Extension Policy (Regulation 5.6.1), the examiner of a course may grant an extension of the due date of an assignment in extenuating circumstances.
- 4 In the event that a due date for an assignment falls on a local public holiday in their area, such as a Show holiday, the due date for the assignment will be the next day. Students are to note on the assignment cover the date of the public holiday for the Examiner's convenience.
- 5 Students who have undertaken all of the required assessments in a course but who have failed to meet some of the specified objectives of a course within the normally prescribed time may be awarded the temporary grade: IM (Incomplete - Make up). An IM grade will only be awarded when, in the opinion of the examiner, a student will be able to achieve the remaining objectives of the course after a period of non-directed personal study.

## **OTHER REQUIREMENTS**

- 1 Students will require reliable and regular access to e-mail and internet to access to USQConnect for this course.
  - 2 Students are required to prepare a portfolio of reflections on their individual learning in the course. This portfolio is auditable and the examiner requires appropriate sections of the portfolio to be submitted with the team peer assessment form at the completion of each project. The due date for the final submission of the complete portfolios is set out in the Assessment Details section of this specification. The portfolio will be further developed in subsequent Problem Based Learning courses.
  - 3 The time specified in Student Workloads allocated to tutorials/workshops should be dedicated to interaction/communication with other team members.
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