Description: Engineering Problem Solving 1

<table>
<thead>
<tr>
<th>Subject</th>
<th>Cat-nbr</th>
<th>Class</th>
<th>Term</th>
<th>Mode</th>
<th>Units</th>
<th>Campus</th>
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<tr>
<td>ENG</td>
<td>1101</td>
<td>62360</td>
<td>1, 2007</td>
<td>EXT</td>
<td>1.00</td>
<td>Toowoomba</td>
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Academic group: FOENS
Academic org: FOENSV
Student contribution band: 2
ASCED code: 039999

STAFFING

Examiner: Lyn Brodie
Moderator: Mark Porter

SYNOPSIS

This course introduces the student to some important measurement and analytical 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 teamwork in most engineering activities. Aspects of physical properties are investigated together with statistical concepts and both these are applied to the analysis of complex systems. The course is presented as an initial introduction to problem based learning, and the use of 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.

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 team working on defined technical problems (Report 2 and Report 3);
2. identify the requirements for leadership in a successful team (Report 1, Portfolio I and Portfolio II);
3. apply an understanding of group dynamics by negotiating, establishing and documenting roles and timelines for a given task (Report 1, Report 2 and Report 3);
4. seek and evaluate the input of other team members (Report 1, Report 2 and Report 3);
5. apply prior knowledge and experience to assist in solving a problem as part of a team, recognising the value of prior knowledge from team members with diverse backgrounds (Report 1, Report 2, Report 3, Portfolio I, II and III);
6. identify and use appropriate scientific and mathematical techniques and procedures to explain phenomena encountered in the set range of problems (Report 2 and Report 3);
7. communicate results in a professional manner (Report 2, Report 3, Portfolio Prt1 Prt2 and Prt3);
8. outline the requirements for measuring physical properties (Report 2 and Report 3);
9. apply basic statistics to analyse measurements and examine the variation that occurs in properties (Report 2 and Report 3);
10. distinguish between "data" and "information" (Report 2 and Report 3);
11. use a computer for general communication and the production of technical reports (all assessment items);
12. apply systems analysis to well defined simple systems/problems (Report 2 and Report 3);
13. evaluate and solve simple technical problems (Report 2 and Report 3).

**TOPICS**

<table>
<thead>
<tr>
<th>Description</th>
<th>Weighting (%)</th>
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<tbody>
<tr>
<td>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:</td>
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<tr>
<td>1.1. Windows Operating System.</td>
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<td>1.2. Computer Terminology.</td>
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<td>1.3. Spreadsheets and Wordprocessing.</td>
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<td>1.4. Use of the Internet.</td>
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<td>1.5. Use of the WWW and Library facilities.</td>
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<td>1.6. Statistical Distributions.</td>
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<tr>
<td>1.7. Statistical Relationships.</td>
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<tr>
<td>1.8. Producing Statistical Data.</td>
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<td>1.9. Introduction to Measurement and SI courses.</td>
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**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).

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


**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.


**STUDENT WORKLOAD REQUIREMENTS**

<table>
<thead>
<tr>
<th>ACTIVITY</th>
<th>HOURS</th>
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<tbody>
<tr>
<td>Assessment</td>
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<tr>
<td>Project Work</td>
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<tr>
<td>Tutorials</td>
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**ASSESSMENT DETAILS**

<table>
<thead>
<tr>
<th>Description</th>
<th>Marks out of</th>
<th>Wtg(%)</th>
<th>Due date</th>
</tr>
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<tbody>
<tr>
<td>PORTFOLIO PART 1</td>
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<td>10.00</td>
<td>19 Mar 2007</td>
</tr>
<tr>
<td>POSTINGS FOR REPORT 1</td>
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<tr>
<td>TEAM REPORT 1</td>
<td>100.00</td>
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<td>23 Mar 2007</td>
</tr>
<tr>
<td>PORTFOLIO PART 2</td>
<td>150.00</td>
<td>15.00</td>
<td>27 Apr 2007</td>
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<td>TEAM REPORT 2</td>
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<td>TEAM REPORT 3</td>
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<tr>
<td>POSTINGS FOR REPORT 3</td>
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<td>15.00</td>
<td>11 Jun 2007</td>
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**IMPORTANT ASSESSMENT INFORMATION**

1. **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 must participate in their assigned group activities through the USQ electronic discussion group for the course on at least a weekly basis. Contributions to this group will be monitored and assessed.

2. **Requirements for students to complete each assessment item satisfactorily:**
   To satisfactorily complete an individual assessment item a student must achieve at least 50% of the marks or a grade of at least C-. (Depending upon the requirements in Statement
students may not have to satisfactorily complete each assessment item to receive a passing grade in this course.)

3 Penalties for late submission of required work:
(i) Team report and individual portfolios submitted after the due date will not be assessed.
(ii) Participation level of less than 30% as indicated on the team cover sheets will 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.

4 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.

5 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.

6 Examination information:
There is no examination in this course.

7 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 email 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.