Description: Electronic Workshop and Production

<table>
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<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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<td>ELE</td>
<td>2501</td>
<td>66685</td>
<td>2, 2007</td>
<td>EXT</td>
<td>1.00</td>
<td>Toowoomba</td>
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**Academic group:** FOENS  
**Academic org:** FOES04  
**Student contribution band:** 2  
**ASCED code:** 031399  

**STAFFING**

Examiner: Glenn Harris  
Moderator: David Parsons  

**REQUISITES**

Pre-requisite: ELE1801 and ELE1502  

**SYNOPSIS**

A technical officer or professional engineer, employed in the electrical and electronic industry, will at some time be involved in the design and development of electronic equipment. A knowledge of manufacturing processes and construction practice is therefore necessary; whether developing new processes, improving existing processes, using manual skills "hands on" or supervising others using these skills. The information presented in this course will provide the necessary background to manufacturing processes and the manual skills necessary to develop a final product. The aim of this course is to enable the student to comprehend the principles of modern manufacturing processes and to acquire competency in the design, construction and documentation of electronic equipment. The principles of component selection, printed circuit design using CAD software, fabrication and assembly techniques are presented and modern automated assembly using surface mount technology is introduced.

**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. analyse electronic components and interpret their specifications with regard to reliability and selection (PCB Design and Timed CMA1);
2. design a printed circuit board to satisfy client and technical requirements, using computer-assisted techniques (PCB Design and Timed CMA1);
3. construct an item of electronic equipment to a specified standard (Electronic Project Assembly and Timed CMA2);
4. develop workshop manuals and other documentation for electronic equipment (Electronic Project Manual and Timed CMA2);
5. compare modern electronic manufacturing processes and techniques (Timed CMA1).

TOPICS

<table>
<thead>
<tr>
<th>Description</th>
<th>Weighting (%)</th>
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<tbody>
<tr>
<td>1. Component Familiarisation</td>
<td>5.00</td>
</tr>
<tr>
<td>2. Electrical and Electronic Drafting</td>
<td>6.00</td>
</tr>
<tr>
<td>3. PCB Design and Manufacture</td>
<td>14.00</td>
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<tr>
<td>4. Introduction to Surface Mount Technology</td>
<td>9.00</td>
</tr>
<tr>
<td>5. Workshop Safety and Practice</td>
<td>6.00</td>
</tr>
<tr>
<td>6. Hand Tools</td>
<td>9.00</td>
</tr>
<tr>
<td>7. Mechanical Design and Construction</td>
<td>16.00</td>
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<td>8. Soldering</td>
<td>18.00</td>
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<tr>
<td>9. Introduction to Troubleshooting</td>
<td>6.00</td>
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<tr>
<td>10. Electronic Equipment Documentation</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).

Approved Electronics Project (Instrumentation Amplifier Kit)
Students will require internet access to USQ Connect for this course.

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.

(Library also has access to this electronically through Netlibrary)
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>Directed Study</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>
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<tbody>
<tr>
<td>PCB DESIGN</td>
<td>150.00</td>
<td>15.00</td>
<td>03 Sep 2007</td>
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<tr>
<td>TIMED CMA 1</td>
<td>250.00</td>
<td>25.00</td>
<td>10 Sep 2007</td>
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<tr>
<td>ELECTRONIC PROJECT ASSEMBLY</td>
<td>250.00</td>
<td>25.00</td>
<td>19 Oct 2007</td>
</tr>
<tr>
<td>ELECTRONIC PROJECT MANUAL</td>
<td>100.00</td>
<td>10.00</td>
<td>19 Oct 2007</td>
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<tr>
<td>TIMED CMA 2</td>
<td>250.00</td>
<td>25.00</td>
<td>29 Oct 2007</td>
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NOTES
1. The Timed CMA's comprise a series of 50 multiple choice questions each. The time allowed for each CMA is 60 minutes and may only be attempted once. The CMA's will be posted on Study Desk and must be completed and submitted on or before the due date.

IMPORTANT ASSESSMENT INFORMATION

1. Attendance requirements:
   There are no attendance requirements for this course. However, it is the students’ responsibility to study all material provided to them or required to be accessed by them to maximise their chance of meeting the objectives of the course and to be informed of course-related activities and administration.

2. Requirements for students to complete each assessment item satisfactorily:
   To complete each of the assessment items satisfactorily, students must obtain at least 50% of the marks available (or at least a grade of C-) for each assessment item.

3. Penalties for late submission of required work:
   If students submit assignments after the due date without prior approval then a penalty of 5% of the total marks available for the assignment will apply for each working day late.

4. Requirements for student to be awarded a passing grade in the course:
   To be assured of receiving a passing grade a student must submit all of the summative assessment items and achieve at least 50% of the available marks for each of those items. Should a student gain more than 50% of the total weighted marks for the course but fail to achieve 50% of the available marks for assignment 1, they will be assigned additional work to allow them to demonstrate to the Examiner that they have achieved the required standard in the objectives assessed by that assessment item.
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 for this course.

7 Examination period when Deferred/Supplementary examinations will be held:
As there are no examinations in this course, there will be no deferred or supplementary
examinations.

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 assignments 1 and 3 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 The Faculty will normally only accept assessments that have been written, typed or printed
on paper-based media.

5 The Faculty will NOT accept submission of assignments by facsimile.

6 Students who do not have regular access to postal services or who are otherwise
disadvantaged by these regulations may be given special consideration. They should
contact the examiner of the course to negotiate such special arrangements.

7 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.

8 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 one of the temporary grades: IM (Incomplete - Make up), IS
(Incomplete - Supplementary Examination) or ISM (Incomplete -Supplementary
Examination and Make up). A temporary 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.

9 Students who, for medical, family/personal, or employment-related reasons, are unable
to complete an assignment or to sit for an examination at the scheduled time may apply
to defer an assessment in a course. Such a request must be accompanied by appropriate
supporting documentation. One of the following temporary grades may be awarded IDS
(Incomplete - Deferred Examination; IDM (Incomplete Deferred Make-up); IDB
(Incomplete - Both Deferred Examination and Deferred Make-up).
OTHER REQUIREMENTS

1 Students will require access to e-mail and internet access to USQConnect for this course.