Description: Electronic Design and Analysis

<table>
<thead>
<tr>
<th>Subject</th>
<th>Cat-Nbr</th>
<th>Class</th>
<th>Term</th>
<th>Mode</th>
<th>Units</th>
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<tr>
<td>ELE</td>
<td>2504</td>
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Academic Group: FOENS
Academic Org: FOES04
HECS Band: 2
ASCED Code: 031303

STAFFING
Examiner: Mark Norman
Moderator: David Parsons

PRE-REQUISITES
Pre-requisite: ELE1502 and ELE2103 Co-requisite: ELE2601

OTHER-REQUISITES
Pre-requisite: 70326 + 70320 Co-requisite: E2005

SYNOPSIS
Familiarity with electronic devices and circuits is fundamental to electrical engineering. The material covered here will further develop both in breadth and depth that which was covered in the preceding courses, with a significant emphasis on developing design skills. Topics to be covered will include: semiconductor devices (discrete and integrated), logic families, multistage amplifiers, operational amplifiers, active filters, negative and positive feedback, oscillators, power supplies and selected circuits used in communication systems.

OBJECTIVES
On completion of this course, students should be able to:

- select and justify common semiconductor devices for given applications;
- analyse and design a wide range of electronic circuits;
- interpret complex circuit diagrams and standard drawings related to other engineering fields;
- develop and test electronic circuit designs, and evaluate their performance.
### TOPICS

<table>
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<th>Description</th>
<th>Weighting (%)</th>
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<tr>
<td>1. Semiconductors</td>
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<tr>
<td>2. Logic circuits</td>
<td>10.00</td>
</tr>
<tr>
<td>3. Amplifiers</td>
<td>20.00</td>
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<tr>
<td>4. Operational amplifiers</td>
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<td>5. Power supplies</td>
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<td>6. Feedback</td>
<td>10.00</td>
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<tr>
<td>7. Oscillators</td>
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<tr>
<td>8. Miscellaneous</td>
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### TEXT and MATERIALS required to be PURCHASED or ACCESSED:

Books can be ordered by fax or telephone. For costs and further details use the 'Book Search' facility at http://bookshop.usq.edu.au by entering the author or title of the text.


Hand tools: 1 small long nose pliers (smooth jaw), 1 wire cutter/stripers, 1 small screw driver (3mm flat blade).

Circuit Prototyping Breadboard.

Programmable scientific calculator.


### 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.

Integrated Circuit Manufacturers Databooks.

STUDENT WORKLOAD REQUIREMENTS

ACTIVITY               HOURS
Assessment            15
Directed Study        50
Examinations          3
Private Study         37
Project Work          40
Report Writing        10

ASSESSMENT DETAILS

<table>
<thead>
<tr>
<th>Description</th>
<th>Marks Out of</th>
<th>Wtg(%)</th>
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<th>Due Date</th>
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<tr>
<td>CMA 1</td>
<td>20.00</td>
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<td>ASSIGNMENT 1</td>
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<td>Y</td>
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<td>CMA 3</td>
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<td>CMA 4</td>
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<td>3 HOUR OPEN EXAMINATION</td>
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(see note)

NOTES:

. Student Administration will advise students of the dates of their examinations during the semester.

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 10% 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 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) satisfactorily completing the
   examination and assignments; 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:
   In an Open Examination, candidates may have access to any material during the
   examination except the following: electronic communication devices, bulky
   materials, devices requiring mains power and material likely to disturb other
   students.

7 Examination period when Deferred/Supplementary examinations will be held:
   Any Deferred or Supplementary examinations for this course will be held during
   the examination period at the end of the semester of the next offering of this course.

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/SECARIAT/calendar/Part5/ or in the printed version of 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 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 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.

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).