



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: Electronic Circuits

Subject	Cat-nbr	Class	Term	Mode	Units	Campus
ELE	1502	90297	2, 2009	EXT	1.00	Toowoomba

<b>Academic group:</b>	FOENS
<b>Academic org:</b>	FOES04
<b>Student contribution band:</b>	2
<b>ASCED code:</b>	031303

### STAFFING

Examiner: Mark Norman  
Moderator: Lyn Brodie

### OTHER REQUISITES

Recommended prior or concurrent study: ELE1801

### SYNOPSIS

This course introduces the fundamental ideas, theory and devices of electronics. It develops these ideas in an applied way to the extent that the student will be able after successful completion, to use integrated circuits, resistors and capacitors to arrange and build a range of circuits, and to apply basic scientific and mathematical principles to analyse simple circuits. The course is designed around a group of concrete projects which the students respond to, build, test and appropriately document. By this approach, a realistic understanding is gained and attention is focussed on those aspects of electronics as a component of engineering industry which are most valuable.

### 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. identify basic scientific principles of simple electronic devices (Assignment and Exam);
2. undertake basic d.c. circuit analysis (Assignment, Project and Exam);
3. design, assemble and test simple electronic circuits to perform a range of functions. These designs should then be evaluated and appropriately documented (Project and Exam);
4. analyse simple electronic circuits by applying basic mathematical transfer functions which describe major blocks of the circuit (Assignment and Exam);
5. use test equipment to operate and test simple circuits (Project);
6. design an assembly of basic functional blocks to perform more complex functions (Project and Exam);
7. modify given circuits with respect to timing, voltage gain and current rating (Project and Exam);

8. apply manufacturers' data to a range of simple integrated circuits (Assignment, Project and Exam);
9. discuss aspects of the effects of electronics on society (Assignment and Project).

## TOPICS

	Description	Weighting (%)
1.	d.c. Circuit Theory	10.00
2.	Diodes and Transistors - Basics	15.00
3.	Power Supplies and Linear Voltage Regulators	10.00
4.	TTL and CMOS Logic Gates	10.00
5.	Monostables and Astables	15.00
6.	Comparators	5.00
7.	Op amps - Basic Circuits	15.00
8.	Power Amplifiers	5.00
9.	Electronic Test Equipment	10.00
10.	The Effect of Electronics on Society	5.00

## 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).

An electronic prototyping breadboard - minimum 800 holes.

Various electronic components and tools as per handbook.

Robbins, AH & Miller, WC 2004, *Circuit analysis with Devices; theory and practice*, Thomson Delmar Learning, Clifton Park, NY.

## 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.

Semiconductor Manufacturers' Data Books

## STUDENT WORKLOAD REQUIREMENTS

ACTIVITY	HOURS
Directed Study	53.00
Examinations	2.00
Private Study	80.00
Report Writing	20.00

## ASSESSMENT DETAILS

Description	Marks out of	Wtg (%)	Due date
ASSIGNMENT	100.00	10.00	14 Sep 2009
PROJECT	200.00	20.00	26 Oct 2009
2 HOUR RESTRICTED EXAMINATION	700.00	70.00	END S2 (see note 1)

### NOTES

1. 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 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 4 below, 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:  
If students submit assignments after the due date without extenuating circumstances then a penalty of 5% of the assigned mark may apply for each working day late up to a maximum of ten working days at which time a mark of zero can be recorded for that assignment.
- 4 Requirements for student to be awarded a passing grade in the course:  
To be assured of receiving a passing grade in a course a student must obtain at least 50% of the total weighted marks for the course.
- 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 a Restricted Examination, candidates are allowed access to specific materials during the examination. The only materials that candidates may use in the restricted examination for this course are: writing materials (non-electronic and free from material which could

- give the student an unfair advantage in the examination); calculators which cannot hold textual information (students must indicate on their examination paper the make and model of any calculator(s) they use during the examination).
- 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/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 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).