



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 Systems

Subject	Cat-nbr	Class	Term	Mode	Units	Campus
ELE	2503	90566	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: Andrew Maxwell

### REQUISITES

Pre-requisite: ELE1502

### RATIONALE

This course together with the previous course ELE1502 Electronic Circuits provides the student with an appreciation of most of the analogue and digital building block circuits which are commonly used in electronic equipment.

### SYNOPSIS

Completion of this course will enable an understanding of the operation of most of the basic circuits found in electronic equipment of both an analogue and a digital nature. The transistor as an amplifier is treated leading to an understanding of differential amplifiers and power amplifiers, but also extending briefly to high frequency effects and problems of handling small voltage signals. This leads to a consideration of operational amplifier small scale effects and thus to the questions of analogue measurements and instrumentation amplifiers. The effect of capacitors on analogue circuit performance is covered leading to active filters and the theory of oscillation in a context of feedback theory. Switched mode voltage regulators are introduced as well as the operation of monostable and astable circuits, waveform generating circuits and interfaces between simple analogue and digital signal areas.

### 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. for each of a range of electronic circuits - explain the function performed and the performance criteria; - describe the principles of operation; - estimate numerical values

- appropriate to performance ; - analyse its operation, evaluate its performance and apply it to a specific task in a practical manner (Assignment 1, Assignment 2 and Exam);
2. develop, test, troubleshoot and examine the performance of a circuit system (Assignment 1 and Assignment 2);

## TOPICS

	Description	Weighting (%)
1.	Transistor amplifiers	15.00
2.	Differential amplifier	10.00
3.	Power amplifier	8.00
4.	High frequency electronics	10.00
5.	Operational amplifier and instrumentation amplifier	12.00
6.	Active filters	5.00
7.	Switched mode voltage regulators	10.00
8.	Feedback and oscillators	10.00
9.	Multivibrators and waveform generation	10.00
10.	Logic interface circuits	10.00

## 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).

Electronic components as specified in notes.

Circuit Prototyping Breadboard.

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

Electronic Circuit Simulation Software 'Microcap 8' (Available: <http://www.spectrum-soft.com> or <http://www.usq.edu.au/users/normanm/ele2503.htm>).

(Demo/Student Edition (freeware))

Robbins, AH & Miller, WC 2004, *Circuit analysis with devices; theory and practice*, Thomson Delmar Learning, USA.

## 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.

Programmable scientific calculator.

## STUDENT WORKLOAD REQUIREMENTS

ACTIVITY	HOURS
Assessments	17.00
Directed Study	60.00
Examinations	2.00
Private Study	36.00
Project Work	40.00

## ASSESSMENT DETAILS

Description	Marks out of	Wtg (%)	Due date
ASSIGNMENT 1	200.00	20.00	21 Aug 2009
ASSIGNMENT 2	200.00	20.00	09 Oct 2009
2 HOUR OPEN EXAMINATION	600.00	60.00	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 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/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).