



Module Code: EJ230021D	Version: 2	Date Amended 24-08-07
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1. Module Title: <i>maximum 100 characters</i>
Electronic Circuits

2a. Module Leader:	2b. Department:	2c. Faculty:
John Martin	Computing and Technology	Science and Technology

3a. Level: <i>see guidance notes</i>	3b. Module Type: <i>see guidance notes</i>
2	Standard

4a. Credits: <i>see guidance notes</i>	4b. Study Hours: <i>see guidance notes</i>
30	300

5. Restrictions	
Pre-requisites:	Mechatronics or Electronics
Co-requisites:	
Exclusions:	None
Pathways to which this module is restricted:	Electronics, AMT, Integrated Engineering – Full Time

LEARNING, TEACHING AND ASSESSMENT INFORMATION (for inclusion in the Module Guide)

6a. Module Description: <i>200 – 300 words</i>
<p>This module provides the student with an introduction to the analysis and design of electronic circuits. The module will review the fundamentals that relate to analogue and digital circuit design.</p> <p>Analogue circuits comprising various amplifier classifications will be introduced and their theoretical models will be explained for circuit design. The analogue section also includes an introduction to active filters and Bode plots, an essential ingredient for electronic circuit design. The phase lock loop and its applications are also discussed.</p> <p>Advanced combinational logic design is introduced together with synchronous counter design comprising various forms of memory elements. The fundamentals of sequential logic design is discussed and explained by well established design rules.</p> <p>The principles of operation of all electronic circuits are covered by lecture, tutorial and computer simulation. Students carry out their assignments from a defined specification and are required to submit an individual report based on their findings. Assessment is by coursework and exam.</p>
6b. Outline Content:
<ul style="list-style-type: none"> • Transfer functions of electronic feedback circuits.. • Frequency response of active and passive electronic circuits.. • Filters • Phase lock loop. • Class A,B,C amplifiers. • Synchronous counter design. (JK, D type memory elements) • Sequential logic circuits. (Design) • Analogue to Digital converter. Digital to analogue converter. • Medium scale integrated circuits. (Shift registers, programmable logic devices) • Design of an analogue/digital circuit using suitable design software.
6c. Key Texts/Literature:
<p>Nilsson Riedel - Electrical Circuits Nilsson Riedel – Art of Electronics Wakerly (2005) Digital design principles and practices. Prentice Hall 4th Edition. Notes - Course notes from Lecturer. Web notes.</p>

6d. Specialist Learning Resources:

Computers and electronic test equipment and simulation software

7. Learning Outcomes (threshold standards):

	On successful completion of this module the student will be expected to be able to:
Knowledge and understanding	<ol style="list-style-type: none"> Understand the analysis and design of electronic circuits. Use the theory to analyse and design complex analogue and digital electronic circuits.
Intellectual, practical, affective and transferable skills	<ol style="list-style-type: none"> Appreciate the tolerance of practical electronic circuits. Apply circuit theory to practical electronic circuits.

8. Learning Activities

Learning Activities	Hours	Learning Outcomes	Additional Comments (including details of use of web-CT)
Teacher managed learning:	72	1,2,3	
Student managed learning:	228	1,2,3,4	
TOTAL	300		

9. Assessment

Assessment Method	% contribution to module mark or P/F	Learning Outcomes
Examination	50	1,2,4
Coursework /Assignment	50	1,2,3,4

In order to pass this module, students are required to achieve an overall mark of 40%

In addition, students are required to (a) for each element of fine graded assessment listed above, achieve a minimum mark of 30% (or higher – see Module Guide) and (b) pass any pass/fail elements

OTHER TECHNICAL DETAILS**10. Delivery of the Module** *Please delete as appropriate*

Delivery	This module is delivered over...	Yes or No?	Indicate which by deleting as appropriate	
2	...two semesters	Y	Semester 1	Semester 2

11. Learning Activities – further details

Learning Activities	Details of duration and frequency of learning activities
Teacher managed learning:	24 weeks. 1.5 hours lecture per week 1.5 hours supervised lab/ tutorial sessions per week
Student managed learning:	Weekly 9.5 hours

12. Module Assessment – further details

Method	Length/duration	Fine graded (FG) or pass/fail (PF)	Minimum Qualifying Mark <i>see guidance notes</i>	Comments
Exam	3 hours	FG	30%	
Assignment	1500 words	FG	30%	

13. Subject: *see guidance notes*