

MODULE DESCRIPTOR

Module Title

Electronics 3

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|-----------|--------------|-------------|--------|
| Reference | EN3512 | Version | 5 |
| Created | July 2019 | SCQF Level | SCQF 9 |
| Approved | July 2009 | SCQF Points | 15 |
| Amended | October 2019 | ECTS Points | 7.5 |

Aims of Module

To provide students with the ability to analyse and synthesise analogue and digital circuits and systems.

Learning Outcomes for Module

On completion of this module, students are expected to be able to:

- 1 Design analogue circuits and systems.
- 2 Create and evaluate analogue circuits and systems.
- 3 Analyse and design digital RTL systems.
- 4 Design and implement digital systems using programmable logic.

Indicative Module Content

Operational amplifier performance characteristics and applications. Analogue signal processing circuits including filters; signal conditioning. Analogue signal acquisition and processing in a Virtual Instrument (VI) environment; basic VI structures for signal capture, analysis and recording. Sequential digital design and implementation using Algorithmic State Machines (ASM); High-level state machines and Register Transfer Level(RTL). The use of programmable logic and high-level description languages in digital system design and implementation.

Module Delivery

This is a lecture-based course supplemented with tutorial sessions, laboratory exercises and student centred learning.

Indicative Student Workload

| | Full Time | Part Time |
|--|-----------|-----------|
| Contact Hours | 45 | 45 |
| Non-Contact Hours | 105 | 105 |
| Placement/Work-Based Learning Experience [Notional] Hours | N/A | N/A |
| TOTAL | 150 | 150 |
| <i>Actual Placement hours for professional, statutory or regulatory body</i> | | |

ASSESSMENT PLAN

If a major/minor model is used and box is ticked, % weightings below are indicative only.

Component 1

Type: Coursework Weighting: 30% Outcomes Assessed: 2, 4
 Description: Design investigation; the results of which will be presented in a suitable medium.

Component 2

Type: Examination Weighting: 70% Outcomes Assessed: 1, 3
 Description: Closed book examination.

MODULE PERFORMANCE DESCRIPTOR**Explanatory Text**

To pass the module, you must achieve a 40% weighted average mark from the exam and coursework. In addition you need to achieve at least 35% in both the individual exam and coursework components.

| Module Grade | Minimum Requirements to achieve Module Grade: |
|--------------|--|
| A | =>70% |
| B | 60-69% |
| C | 50-59% |
| D | 40-49% |
| E | 35-39% |
| F | 0-34% |
| NS | Non-submission of work by published deadline or non-attendance for examination |

Module Requirements

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|--------------------------|---|
| Prerequisites for Module | Electronics 2 (EN2510) or the equivalent. |
| Corequisites for module | None. |
| Precluded Modules | None. |

ADDITIONAL NOTES

An Indicative Bibliography will normally reference the latest edition of a text. In some cases, older editions are equally useful for students and therefore, those are the editions that may be stocked.

INDICATIVE BIBLIOGRAPHY

- 1 BOTROS, N., 2005. HDL Programming Fundamentals: VHDL and Verilog. Rockland, MA: Charles River Media, Inc.
- 2 FRANCO, S., 2014. Design with Operational Amplifiers and Analog Integrated Circuits. 4th ed. New York, NY: McGraw-Hill.
- 3 ROTH, C. H., 2013. Fundamentals of Logic Design. 7th ed. Nashville, TN: Thomson/Nelson.
- 4 SEDRA, A.S. and SMITH, K.C., 2014. Microelectronic Circuits. 7th ed. New York, NY: Oxford University Press.