Module Title **Electronics 3** **Keywords** Analogue systems, analogue signal processing, virtual instruments, ASM, programmable logic, HDL	Reference EN3512 SCQF SCQF Level 9 SCQF Points 15 ECTS Points 7.5 Created May 2002 Approved July 2009 Amended August 2011 Version No. 2

This Version is No Longer Current

The latest version of this module is available here

Prerequisites for Module

Electronics 2 (EN2510) or the equivalent.

Corequisite Modules

None.

Precluded Modules

None.

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,

Indicative Student Workload

Contact Hours	Full Time	Part Time
Assessment	2	2
Laboratory-based Exercises	12	12
Lectures/tutorials	30	30
Directed Study		
Directed Self Study/Coursework Preparation	48	48
Private Study		
Private Study	58	58

Mode of Delivery

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

Assessment Plan

students are expected to be able to:

1. Design analogue circuits and systems.
2. Construct basic signal acquisition systems using Virtual Instrumentation techniques.
3. Design and implement digital systems using programmable logic.
4. Interpret, use and create HDL code for digital systems.

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 Language(RTL).

The use of programmable logic

	Learning Outcomes Assessed
Component 1	1,2
Component 2	1,2,3,4

Component 2 is a closed book examination (70% weighting).

Component 1 is a coursework which involves design investigation; the results of which will be presented in a suitable medium (30% weighting).

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.

Additional Notes

An Indicative Bibliography will normally reference the latest edition of a text. In some cases, older editions are equally useful for

The use of programmable logic and high-level description languages in digital system design and implementation.

students and therefore, those are the editions that may be stocked.