

Module specification

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Module Code	ENG60D
Module Title	Electronics Design and Testing
Level	6
Credit value	20
Faculty	FAST
HECoS Code	100165
Cost Code	GAME

Programmes in which module to be offered

Programme title	Is the module core or option for this programme
BEng (Hons) Electrical & Electronic Engineering	Core
MEng Electrical & Electronic Engineering	Core
BEng (Hons) Industrial Engineering (Mechatronics)	Core

Pre-requisites

None

Breakdown of module hours

Learning and teaching hours	24 hrs
Placement tutor support	0 hrs
Supervised learning e.g. practical classes, workshops	0 hrs
Project supervision (level 6 projects and dissertation modules only)	0 hrs
Total active learning and teaching hours	24 hrs
Placement / work based learning	0 hrs
Guided independent study	176 hrs
Module duration (total hours)	200 hrs

For office use only	
Initial approval date	Feb 2017
With effect from date	Sept 2022
Date and details of revision	Sept 2022: Learning outcomes and assessment update in Engineering revalidation
Version number	3

Module aims

- To extend the students' knowledge of analogue electronic components as the building blocks for developing more complex analogue circuit designs.
- To extend the students thinking to consider the interrelationships of testing and design within the manufacturing life cycle of electronic products.

Module Learning Outcomes - at the end of this module, students will be able to:

1	Analyse circuits to determine circuit performance.
2	Design electronic circuits to meet a given specification.
3	Evaluate circuits to consider the most suitable testing methodology.
4	Evaluate the ethical and sustainable considerations in the manufacturing life cycle of electronic design and testing.

In addition, to the module learning outcomes, student will also cover the following accreditation of higher education programme (AHEP) fourth edition learning outcomes: B1 & B2 for BEng Industrial Engineering level 6 top-up and C1 & C2 for BEng (Hons) Electrical and Electronic Engineering.

Assessment

Indicative Assessment Tasks:

This section outlines the type of assessment task the student will be expected to complete as part of the module. More details will be made available in the relevant academic year module handbook.

The learning outcomes will be assessed by way of a 3 hour examination.

Assessment number	Learning Outcomes to be met	Type of assessment	Weighting (%)
1	1,2,3 &4	Examination	100%

Derogations

A derogation from regulations has been approved for this programme which means that whilst the pass mark is 40% overall, each element of assessment (where there is more than one assessment) requires a minimum mark of 30%.

Learning and Teaching Strategies

The module will align with the principle of the university Active Learning Framework (ALF) and will offer learning and teaching approaches that aid flexibility and accessibility. There will be a learning blend between online and face to face methods, such as:

- In person seminars
- Online synchronous sessions
- Online asynchronous sessions
- Self-directed study tasks that will include videos, podcasts and professional organisation websites

Indicative Syllabus Outline

Design

- Recap on Basic Analogue Electronics
- Bipolar Transistor Circuits
- Field Effect Transistor Circuits
- Operational Amplifier Circuits
- The Design Process
- Sustainable Design
- Design for Testability

Testing

- Manual Testing
- Automated Testing
- Testing Digital Circuits
- Testing Analogue Circuits
- Power Supply Testing

Indicative Bibliography:

Please note the essential reads and other indicative reading are subject to annual review and update.

Essential Reads

E. Hughes, et al., *Electrical and Electronic Technology*, 12th ed. Pearson, 2016.

All the course material for this module will be provided and published on the VLE

Other indicative reading

Plus, various others to be signposted on Moodle.

Employability skills – the Glyndŵr Graduate

Each module and programme is designed to cover core Glyndŵr Graduate Attributes with the aim that each Graduate will leave Glyndŵr having achieved key employability skills as part of their study. The following attributes will be covered within this module either through the content or as part of the assessment. The programme is designed to cover all attributes and each module may cover different areas.

Core Attributes

Engaged
Creative
Ethical

Key Attitudes

Commitment
Curiosity
Confidence
Adaptability

Practical Skillsets

Digital Fluency
Organisation
Critical Thinking
Emotional Intelligence
Communication