MODULE SPECIFICATION

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Refer to guidance notes for completion of each section of the specification.

Module Code:	ENG4AE

Module Title:	Introduction to Basic Electronic Workshop Handskills

Level:	4	**Credit Value:**	**10**

Cost Centre(s):	GAME	JACS3 **code**: HECoS code:	H690 100163

Faculty	Arts, Science and Technology	**Module Leader:**	Andrew Sharp

Scheduled learning and teaching hours	0 hrs
Placement tutor support	0 hrs
Supervised learning eg practical classes, workshops	18 hrs
Total contact hours	**18** hrs
Guided independent study	82 hrs
Module duration (total hours)	100 hrs

Programme(s) in which to be offered (not including exit awards)	Core	Option
Standalone module affiliated to BEng Electrical and Electronic Engineering for QAA purposes	☐	✓

Pre-requisites
N/A

Office use only
Initial approval: 09/07/2020 Version no: 1
With effect from: 01/09/2020
Date and details of revision: Version no:

Module Aims
This short course aims to: • Introduce the principles of electronics, digital and analogue • Identify different components and their symbols • Enable learners to use circuit diagrams • Use circuit simulation software for circuit design • Prototype circuits on breadboard • Build circuits using through hole techniques • Understand how to use the different test pieces of equipment commonly found in an electronics workshop • Build and test electronic circuits

Module Learning Outcomes - at the end of this module, students will be able to	
1	Build and test a basic electronic circuit from a circuit diagram
2	Select and use appropriate test equipment to confirm the functionality of a circuit
3	State the underpinning theoretical principles of working safely and effectively in an electronic workshop environment

Employability Skills **The Wrexham Glyndŵr Graduate**	**I = included in module content** **A = included in module assessment** **N/A = not applicable**
Guidance: complete the matrix to indicate which of the following are included in the module content and/or assessment in alignment with the matrix provided in the programme specification.	
CORE ATTRIBUTES	
Engaged	I
Creative	A
Enterprising	N/A
Ethical	I
KEY ATTITUDES	
Commitment	A
Curiosity	A
Resilient	N/A
Confidence	I
Adaptability	A
PRACTICAL SKILLSETS	
Digital fluency	A
Organisation	A
Leadership and team working	N/A
Critical thinking	A
Emotional intelligence	N/A
Communication	A

Derogations
None

Assessment:
Indicative Assessment Tasks:
Assessment One: Complete a practical task such as to build and test an electronic circuit from a given circuit diagram. Assessment Two: Complete a multiple choice quiz covering the underpinning knowledge required to work safely and effectively in and electronics workshop (30 minutes).

Assessment number	Learning Outcomes to be met	Type of assessment	Weighting (%)
1	1 & 2	Practical	50%
2	3	Multiple Choice Questions	50%

Learning and Teaching Strategies:
Teaching will be a combination of supervised practical classes and workshops to develop practical skills and guided independent study via VLE to facilitate and enable learning of underlying concepts

Syllabus outline:

<u>Good Workshop Practice</u>

- Getting familiar with the workshop
- General housekeeping
- Roles and responsibilities in the workshop
- Importance of personal protective equipment (PPE)
- An introduction to risk assessment
- Identifying Hazards
- Lifting, Moving and Working at Heights
- Reporting accidents and injuries

<u>Electronic Test Equipment</u>

- Recap on the basics – what is current voltage, resistance, frequency etc.
- Selecting appropriate test equipment
- Introduction to using power supplies, signal generators, digital multimeters and

oscilloscopes

Introduction to through hole soldering

- Soldering skills and workshop practices
- Soldering irons and methods
- Solder composition types and fluxes
- Electrostatic discharge (ESD) precautions
- PCB Types and Construction
- Practical reworking and repair skills and techniques
- Vacuum de-soldering, de-solder pumps and solder wick

Using Circuit Simulation Software

- Why is circuit simulation software useful?
- Multisim Basics
- Introduction to Ultiboard

Indicative Bibliography:
Essential reading
All the course material for this module will be provided and published on the VLE
Other indicative reading
Bird, J. (2017) *Electrical Circuit Theory and Technology,* 6th Edn., Newnes.