

Module Title:	Electronic Engineering Practice
Language of Instruction:	English
Credits:	10
NFQ Level:	6
Module Delivered In	No Programmes
Teaching & Learning Strategies:	The following tools shall be used to teach this module - Industrial training films - Practical Instructor demonstrations - Interactive lecture with group discussion on safety - Practical assignments designed using project based learning techniques - Schematic and PCB layout (CAD) software packages - Practical exercises using excel and Geogebra
Module Aim:	To give the students the knowledge, competencies and skills necessary to [a] construct an electronic project from specified design to final test of the enclosed PCB based unit. [b] Use electronic CAD software to simulate, analyse and explore the operation of basic electronic circuits. [c] Interpret key mathematical principles visually, develop interactive models and extend theoretical understanding using technical computing environments.

Learning Outcomes	
On successful completion of this module the learner should be able to:	
LO1	Operate in an electronics workshop laboratory with due regard for health and safety (H&S) and environmental considerations.
LO2	Design circuit layouts, construct prototype boards and test basic electronic circuits using appropriate tools and equipment.
LO3	Use electronic CAD software to simulate, analyse and explore the operation of basic electronic circuits.
LO4	Carry out data formatting, engineering based calculations, graphing and analysis on real world engineering data using a spreadsheet
LO5	Interpret key mathematical principles visually, develop interactive models and extend theoretical understanding using technical computing environments.

Pre-requisite learning
Module Recommendations <i>This is prior learning (or a practical skill) that is recommended before enrolment in this module.</i>
No recommendations listed
Incompatible Modules <i>These are modules which have learning outcomes that are too similar to the learning outcomes of this module.</i>
No incompatible modules listed
Co-requisite Modules
No Co-requisite modules listed
Requirements <i>This is prior learning (or a practical skill) that is mandatory before enrolment in this module is allowed.</i>
No requirements listed

Module Content & Assessment

Indicative Content

(a) Safety and safe working practices and environmental considerations

Safety precautions when soldering and using tools. Exercise proper safety procedures when working in a laboratory to ensure personal safety including general principles, eating, drinking and an understanding of electric shock hazard.

(b) Identification of electronic components and their symbol.

Identification of components and correct identification of component pinout using datasheets.

(c) Electronic design, schematic capture and simulation.

Use an industry standard package for Electronic Design and simulation of circuits.

(d) Test and measurement of a prototype board.

Build and test circuits on breadboard and compare results with simulation software build circuits.

(e) Soldering and assembly.

Create planning sheet from schematic diagrams before soldering the circuit using strip-board.

(f) Basic enclosure / finishing and assembly.

Install finished circuit into an enclosure to complete assembly.

(g) Spreadsheet fundamentals with engineering applications.

Create spreadsheets with good layout specifically for engineering students appropriate for engineering computations.

(h) Mathematical CAD

Carry out exercises on co-ordinate geometry, algebra, statistics and applied calculus using a graphical mathematical CAD program such as GeoGebra.

(i) Lab report.

Write a formal report based on the schematic diagram and instructions assigned.

Assessment Breakdown	%
Continuous Assessment	50.00%
Practical	50.00%

Continuous Assessment

Assessment Type	Assessment Description	Outcome addressed	% of total	Assessment Date
Examination	Class and laboratory exercises to be completed along with combined written & practical tests.	2,3,4,5	50.00	n/a

No Project

Practical

Assessment Type	Assessment Description	Outcome addressed	% of total	Assessment Date
Practical/Skills Evaluation	Typical assignments: (a) Soldering assignment using wire links and a continuity checker. (b) Assemble a timer circuit on stripboard. (c) Stripboard assembly of a continuity test circuit. (d) Generate a schematic and test circuit using simulation software. (e) Use software to create planning sheets for circuits prior to soldering on stripboard. (f) Build and test a car brake fluid indicator circuit. (g) Construct and test a logic probe. (h) Build and test an electronic instrument such as a combined continuity tester/voltage detector. (i) Construct and test a LED battery voltage level indicator.	1,2,3	50.00	n/a

No End of Module Formal Examination

SETU Carlow Campus reserves the right to alter the nature and timings of assessment

Module Workload

Workload: Full Time		
<i>Workload Type</i>	<i>Frequency</i>	<i>Average Weekly Learner Workload</i>
Practicals	Every Week	3.00
Laboratory	Every Week	1.00
Laboratory	Every Week	2.00
Total Hours		6.00

