Module Title:	System Design and Test
Language of Instruction:	English

Credits:	5

NFQ Level:	6

Module Delivered In	3 programme(s)

Teaching & Learning Strategies:	A series of lectures, using whiteboard, data projector and video, will initiate and broaden the students' knowledge of the principles and practices of measurement and test of electronic circuits and systems. (b) A series of demonstrations and practical exercises using CAD software along with electronic/mechanical workshop sessions designed to teach the skills of electronic design, build, measurement and test. A series of lectures, demonstrations and practical sessions will be used to broaden the students' knowledge of the principles and practices of design and test of electronic circuits and systems.

Module Aim:	To give the students the knowledge, competencies and skills necessary to (a) Obtain accurate, reliable measurements in electronic circuits and systems (b) Design, build and test electronic components and circuits to determine if they are working within specification.(c)Generate PCB layout drawings(d)Develop an electronic and mechanical design to build & test a project. To give the students the knowledge and competencies necessary to design, build and test electronic components and circuits. to give students the skills to obtain accurate measurements and determine if circuits and or components are working within specification.

Learning Outcomes
On successful completion of this module the learner should be able to:

LO1	Design electronic schematics and PCB layout drawings using industry standard tools
LO2	Use appropriate instruments to take accurate graphical and numerical measurements in electronic systems to determine if they are working within specification.
LO3	Understand the safety and ethical considerations surrounding the testing and operation of electronic equipment.
LO4	Execute the assembly and testing of the electronic project.

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

Module Content & Assessment

Indicative Content
Safety and safe working practices. Recognise the risks associated with working with electrical equipment; soldering equipment; chemicals and hand tools. Follow/describe safe working practices when working with electrical equipment, soldering equipment, chemicals and hand tools.
ECAD design and testing of circuits / PCBs. Build and take measurements using CAD simulation software. Create new components for electronic schematics. Carry out basic placement and routing techniques. Use block editing and route editing facilities. Route a PCB from the net-list. Use the various filing commands. Carry out auto-placement and auto-routing. Create new packages for PCB layout drawings. Use the design rule checker and interpret results.
Development of electronic and mechanical design. Generate all the documentation required to build and test the project. Build the PCB assembly using the fabricated PCB and selected components. Carry out PCB testing. Complete all mechanical assembly required (e.g. panel mounting, enclosure customisation). Verify finished project conforms to specifications.
Technical report. Write structured report documenting all work completed including CAD software, prototyping, tests results and datasheets.
Measurement Take measurements using a variety of test and measurement equipment (DVMs, frequency counters and oscilloscopes) and evaluate the accuracy of the readings.

Assessment Breakdown	%
Project	100.00%

No Continuous Assessment

Project				
Assessment Type	*Assessment Description*	*Outcome addressed*	*% of total*	*Assessment Date*
Project	Design and build a project, generating all the documentation using CAD software. Write up a report with test results and conclusions.	1,2,3,4	100.00	n/a

No Practical

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		
Workload Type	*Frequency*	*Average Weekly Learner Workload*
Practicals	Every Week	4.00
	Total Hours	4.00

Module Delivered In

Programme Code	Programme	Semester	Delivery
CW_EEBEE_B	[Bachelor of Engineering (Honours) in Biomedical Electronics](#)	3	Mandatory
CW_EESYS_B	[Bachelor of Engineering (Honours) in Electronic Engineering](#)	3	Mandatory
CW_EEBEE_D	[Bachelor of Engineering in Biomedical Electronics](#)	3	Mandatory

Programme Code	Programme	Semester	Delivery
CW_EEBEE_B	[Bachelor of Engineering (Honours) in Biomedical Electronics](#)	3	Mandatory
CW_EESYS_B	[Bachelor of Engineering (Honours) in Electronic Engineering](#)	3	Mandatory