Module Title:	Robotics Programming 2
Language of Instruction:	English

Credits:	10

NFQ Level:	6

Module Delivered In	2 programme(s)

Teaching & Learning Strategies:	A combination of lectures, class discussions, tutorials, laboratory exercises and demonstrations will be used. Emphasis will be placed on active learning including problem / project-based learning.

Module Aim:	To advance the students' knowledge in software development using a high-level programming language; to equip students with the skills and techniques required to develop software using an industry standard integrated development environment (IDE).

Learning Outcomes	
On successful completion of this module the learner should be able to:	
LO1	Demonstrate an understanding of software and algorithm development and the building blocks of a high-level programming language.
LO2	Utilise modular programming, flowcharts, pseudocode and debugging techniques in software development.
LO3	Define and use a variety of data types and structures in an appropriate context.
LO4	Produce clearly documented source code using a neat programming style.
LO5	Use a distributed revision control and source code management system.
LO6	Combine programming constructs to implement problem-solving algorithms, compare good and bad implementations and algorithms.
LO7	Work as an individual or in a small group to design and implement a software solution for a real world problem using a basic textual description of the problem.

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
Data Types Data types, arrays, strings, pointers, structures, typecasting
Making Decisions and Iterations Conditional statements, ternary operator, loops, nesting
Functions User-defined functions, passing by value and by reference, recursion
Algorithms Algorithm implementation (sorting, search, numerical methods)
Software Development, Testing and Debugging Use a professional Integrated Development Environment (IDE) and debug code (breakpoints, single step), develop algorithms

Assessment Breakdown	%
Project	40.00%
Practical	20.00%
End of Module Formal Examination	40.00%

No Continuous Assessment

Project				
Assessment Type	*Assessment Description*	*Outcome addressed*	*% of total*	*Assessment Date*
Project	A problem-based learning project based on real world scenarios.	1,2,3,4,5,7	40.00	n/a

Practical				
Assessment Type	*Assessment Description*	*Outcome addressed*	*% of total*	*Assessment Date*
Practical/Skills Evaluation	Practical assessments to complement the laboratory exercises.	1,2,3,4,5,6,7	20.00	n/a

End of Module Formal Examination				
Assessment Type	*Assessment Description*	*Outcome addressed*	*% of total*	*Assessment Date*
Formal Exam	A final theory and practical exam to assess the students' learning.	1,2,3,4,5,6	40.00	End-of-Semester

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*
Lecture	Every Week	3.00
Laboratory	Every Week	4.00
Independent Learning Time	Every Week	11.00
	Total Hours	18.00

Module Delivered In

Programme Code	Programme	Semester	Delivery
CW_EEROB_B	[Bachelor of Engineering (Honours) in Robotics and Automated Systems](#)	3	Mandatory
CW_EEROO_D	[Bachelor of Engineering in Robotics and Automated Systems](#)	3	Mandatory