

<b>Module Title:</b>	Robotics Programming 1
<b>Language of Instruction:</b>	English
<b>Credits:</b>	5
<b>NFQ Level:</b>	6
<b>Module Delivered In</b>	<a href="#">2 programme(s)</a>
<b>Teaching &amp; Learning Strategies:</b>	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.
<b>Module Aim:</b>	To introduce students to software development using a high-level programming language; to equip students with the skills and techniques required to develop software using an integrated development environment (IDE).

Learning Outcomes	
<i>On successful completion of this module the learner should be able to:</i>	
LO1	Demonstrate an understanding of software and algorithm development and the building blocks of a high-level programming language.
LO2	Utilise, flowcharts, pseudocode and debugging techniques in software development.
LO3	Define and use a variety of data types and structures in an appropriate context.
LO4	Demonstrate an understanding of program flow and control
LO5	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
<b>Module Recommendations</b> <i>This is prior learning (or a practical skill) that is recommended before enrolment in this module.</i>
No recommendations listed
<b>Incompatible Modules</b> <i>These are modules which have learning outcomes that are too similar to the learning outcomes of this module.</i>
No incompatible modules listed
<b>Co-requisite Modules</b>
No Co-requisite modules listed
<b>Requirements</b> <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

#### Software Design

Core elements of computer programs

#### Data Types

Data types, arrays, strings, structures, typecasting

#### Making Decisions and Iterations

Conditional statements, ternary operator, loops, nesting

#### Functions

User-defined functions, calling and passing values to functions

#### Software Development, Testing and Debugging

Use a professional Integrated Development Environment (IDE) and debug code (breakpoints, single step), develop algorithms

Assessment Breakdown	%
Continuous Assessment	40.00%
Project	40.00%
Practical	20.00%

### Continuous Assessment

Assessment Type	Assessment Description	Outcome addressed	% of total	Assessment Date
Examination	A mixture of theory and/or practical assessments to reinforce learning throughout the semester.	1,2,3,4	40.00	n/a

### 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	40.00	n/a

### Practical

Assessment Type	Assessment Description	Outcome addressed	% of total	Assessment Date
Practical/Skills Evaluation	A series of programming exercises to complement the theory elements of the module.	1,2,3,4	20.00	n/a

No End of Module Formal Examination

### Continuous Assessment

Assessment Type	Assessment Description	Outcome addressed	% of total	Assessment Date
Examination	A mixture of theory and/or practical assessments to reinforce learning throughout the semester.	1,2,3,4	40.00	n/a

### 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	40.00	n/a

### Practical

Assessment Type	Assessment Description	Outcome addressed	% of total	Assessment Date
Practical/Skills Evaluation	A series of programming exercises to complement the theory elements of the module.	1,2,3,4	20.00	n/a

No End of Module Formal Examination

**Module Workload**

<b>Workload: Full Time</b>		
<i>Workload Type</i>	<i>Frequency</i>	<i>Average Weekly Learner Workload</i>
Lecture	Every Week	2.00
Laboratory	Every Week	3.00
Independent Learning Time	Every Week	2.00
Total Hours		7.00

**Module Delivered In**

Programme Code	Programme	Semester	Delivery
CW_EEROB_B	<a href="#">Bachelor of Engineering (Honours) in Robotics and Automated Systems</a>	1	Mandatory
CW_EEROO_D	<a href="#">Bachelor of Engineering in Robotics and Automated Systems</a>	1	Mandatory