# PROG C1601: Robotics Programming 1

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| **Module Title:** | Robotics Programming 1 |
| **Language of Instruction:** | English |

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| **Credits:** | 5 |

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| **NFQ Level:** | 6 |

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| **Module Delivered In** | 2 programme(s) |

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| **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. |

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| **Module Aim:** | 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** | |
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| *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, 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** |
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| ***Module Recommendations***<br>*This is prior learning (or a practical skill) that is recommended before enrolment in this module.* |
| No recommendations listed |
| ***Incompatible Modules***<br>*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***<br>*This is prior learning (or a practical skill) that is mandatory before enrolment in this module is allowed.* |
| No requirements listed |

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## Module Content & Assessment

| Indicative Content |
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| **Software Design**<br>Core elements of computer programs |
| **Data Types**<br>Data types, arrays, strings, structures, typecasting |
| **Making Decisions and Iterations**<br>Conditional statements, ternary operator, loops, nesting |
| **Functions**<br>User-defined functions, calling and passing values to functions |
| **Software Development, Testing and Debugging**<br>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

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

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## Module Workload

| Workload: Full Time | | |
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| *Workload Type* | *Frequency* | *Average Weekly Learner Workload* |
| 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 | Bachelor of Engineering (Honours) in Robotics and Automated Systems | 1 | Mandatory |
| CW_EEROO_D | Bachelor of Engineering in Robotics and Automated Systems | 1 | Mandatory |