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| **Module code** | SS-4311 | | | |
| **Module Title** | Robot Programming | | | |
| **Degree/Diploma** | Bachelor of Science (Computer Science) | | | |
| **Type of Module** | Major Option | | | |
| **Modular Credits** | 4 | **Total student Workload** | 10 | hours/week |
| | | **Contact hours** | 4 | hours/week |
| **Prerequisite** | SS-1204 Computer Architecture and Organisation<br>SM-1301 Discrete Mathematics | | | |
| **Anti-requisite** | None | | | |

**Aims**

This module introduces fundamental knowledge and programming techniques of robotics. The module emphasizes on code development and debugging for mobile robot platforms.

This module is a compulsory module for Soft Computing stream.

**Learning Outcomes**

*On successful completion of this module, a student will be expected to be able to*:

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| Lower order : | 0% | |
| Middle order : | 0% | |
| Higher order: | 100% | - program a microcontroller<br>- create programs to read sensor signals<br>- create programs to detect the dynamics of actuators<br>- design feed-forward and feedback controls for mobile robots<br>- analyse and evaluate robot performance |

**Module Contents**

- Fundamentals of sensors, measurement and estimation
- Fundamentals of actuators, measurement and estimation
- Kinematic and dynamic model of robots
- Robot control architecture
- Control techniques for mobile robots
- Programming and debugging techniques for mobile robots

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| **Assessment** | Formative assessment | Interactive Quizzes and Feedback |
| | Summative assessment | Examination: 0% |
| | | Coursework: 100%<br>- 1 oral presentation (30%)<br>- 1 individual report (70%) |