## Automation and Robotics

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| *SMS Code* | IN621001 | *Directed Learning hours* | 60 |
| *Level* | 6 | *Workplace or Practical Learning hours* | 0 |
| *Credits* | 15 | *Self-Directed Learning hours* | 90 |
| Prerequisites | IN620001 | *Total Learning Hours* | 150 |
| *This course approved in another Programme: No* | | | |

***Aims***

To extend the skills learned in IN620001: Embedded Systems so that students can build artefacts which are physically complex, behaviourally complex and highly interactive.

***Learning Outcomes***

At the successful completion of this course, students will be able to:

1. Discuss comprehensively the range of application areas for robotics, automation and ubiquitous computing.
2. Understand core electronic and mechanical principles of robotics/automated systems design.
3. Analyse and select appropriate software development platforms for robotics/automated systems implementation.
4. Design a simple robotics/automated solution to a specified problem following sound principles of interaction design.
5. Use an appropriate software development platform to implement simple interactive robotics/automated systems.

***Indicative Content***

* Discussion of historical development of automated systems
* Survey of application areas
* Robotics simulator work
* Hardware of robotics/automated/ubiquitous systems
* Development software – options and issues
* Interaction design – human factors and machine design principles
* Project work – Design and construction of interactive robotics/automated systems

***Assessment***

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| **Assessment Activity** | **Weighting** | **Learning Outcomes** |
| In-class practicals | 10% | 1,4 |
| Theory examination | 10% | 2,3,4 |
| Projects | 80% | 2,3,4,5 |

***Resources***

**Required:**

None

**Recommended:**

Text books and readings are administered as appropriate and updated to reflect ongoing conceptual and technological developments.