# Unit Outline (Higher Education)

| | |
|---|---|
| **Institute / School:** | Institute of Innovation, Science & Sustainability |
| **Unit Title:** | ADVANCED INDUSTRIAL ROBOTIC SYSTEMS |
| **Unit ID:** | ENGIN5403 |
| **Credit Points:** | 15.00 |
| **Prerequisite(s):** | Nil |
| **Co-requisite(s):** | Nil |
| **Exclusion(s):** | Nil |
| **ASCED:** | 030101 |

**Description of the Unit:**

This unit provides the general theories, methodologies, practices and use of armed robotic systems in industry. The unit provides a general understanding of the role of robotic technology in industry and allows to develop skills in analysis and synthesis of an articulated robot arm. In addition, use of robotics in industrial automation and trends in robotics will be discussed.

**Grade Scheme:** Graded (HD, D, C, P, MF, F, XF)

**Work Experience:**

No work experience: Student is not undertaking work experience in industry.

**Placement Component:** No

**Supplementary Assessment:** Yes

Where supplementary assessment is available a student must have failed overall in the Unit but gained a final mark of 45 per cent or above, has completed all major assessment tasks (including all sub-components where a task has multiple parts) as specified in the Unit Description and is not eligible for any other form of supplementary assessment

**Course Level:**

| Level of Unit in Course | AQF Level of Course | | | | | |
|---|---|---|---|---|---|---|
| | **5** | **6** | **7** | **8** | **9** | **10** |
| Introductory | | | | | | |

| Level of Unit in Course | AQF Level of Course | | | | | |
|---|---|---|---|---|---|---|
| | **5** | **6** | **7** | **8** | **9** | **10** |
| Intermediate | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ |
| Advanced | ☐ | ☐ | ☐ | ☐ | ✔ | ☐ |

## Learning Outcomes:

On successful completion of the unit the students are expected to be able to:

### Knowledge:

**K1.** Annotate and restate advanced knowledge of common terminologies and conventions in industrial robotic systems.

**K2.** Research the most important concepts in the selection of robotic systems.

**K3.** Appraise the theories and mathematics underpinning the mobility of robot systems.

### Skills:

**S1.** Calculate performance parameters of industrial robotic systems.

**S2.** Design models using mathematical tools for industrial robotic systems.

**S3.** Examine and compute real time realisation of industrial robotic systems.

### Application of knowledge and skills:

**A1.** Apply mathematical and theoretical knowledge to design and model industrial robotic systems.

**A2.** Interpret theories to analyse industrial robotic systems.

**A3.** Analyse and troubleshoot industrial robotic systems as part of mechatronic systems and automation.

## Unit Content:

Topics may include:

- Automation technology in industry
- Mathematical skills for analysis and synthesis of an articulated robots
- Selection and application of robots for industrial applications
- Social and financial implementation of robotics
- Future trends in robotics and innovation

## Learning Task and Assessment:

| Learning Outcomes Assessed | Assessment Tasks | Assessment Type | Weighting |
|---|---|---|---|
| K1 - K3, S1 - S3, A1 - A3 | Experimental work and / or projects to verify students ability to apply knowledge and skills acquired in the unit. | Reports, demonstrations | 15% - 25% |
| K1 - K3, S1 - S3, A1 - A3 | Relevant tasks and problems to enforce understanding of the students and help in gradual development of knowledge and skills throughout the unit. | Assignments, quizzes | 15% - 25% |
| K1 - K3, S1 - S3, A1 - A3 | Questions and problems related to the materials covered in the unit. | Mid and / or End of semester examination | 50% - 70% |

## Adopted Reference Style:

Other  (IEEE)

Refer to the [library website](#) for more information

Fed Cite - [referencing tool](#)