

Unit Outline (Higher Education)

Institute / School: Institute of Innovation, Science & Sustainability

Unit Title: INDUSTRIAL ROBOTIC SYSTEMS

Unit ID: ENGIN4401

Credit Points: 15.00

Prerequisite(s): (ENGIN3406 or ENMTX4010)

Co-requisite(s): Nil

Exclusion(s): (ENMTX3070)

ASCED: 039999

Description of the Unit:

This unit introduces students to the industrial robotic systems with a focus on designing and building robotic manufacturing cells, and explores the capabilities of current industrial equipment as well as the latest computer and software technologies. Further, attention is given to the input devices and systems that create efficient human-machine interfaces, and how they help non-technical personnel perform necessary programming, control, and supervision tasks. Selection of robot systems working envelopes, sensitivity, accuracy, etc. 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	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Intermediate	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Advanced	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Learning Outcomes:

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

Knowledge:

- K1.** Explain common terminologies and conventions in industrial robotic systems.
- K2.** Explain the most important concepts in the selection of robotic systems.
- K3.** Understand the theories and mathematics underpinning the mobility of robot systems.

Skills:

- S1.** Design of industrial robotic systems.
- S2.** Mathematical modelling of industrial robotic systems.
- S3.** Use of mathematical tools for design and control of industrial robotic systems.

Application of knowledge and skills:

- A1.** Integrate knowledge for design and development of industrial robotic systems.
- A2.** Apply theories to analyse industrial robotic systems.
- A3.** Design industrial robotic systems for mechatronic applications such as manufacturing automation.

Unit Content:

Topics may include:

- The current industrial robotic equipment including manipulators, control systems, and programming environments.
- Software interfaces that can be used to develop distributed industrial manufacturing cells and techniques which can be used to build interfaces between robots and computers.

Learning Task and Assessment:

Learning Outcomes Assessed	Assessment Tasks	Assessment Type	Weighting
S1-S3, A1-A3	Understanding of principles and mathematics involved.	Laboratory and tutorials	10 - 30%
S1-S3, A1-A3	To verify the gradual understanding of concepts.	Assignments	20 - 40%
K1-K3, A1-A3	Questions and problems for the unit content.	Exams / Tests	40 - 60%

Adopted Reference Style:

Other (IEEE-Refer to the library website for more information.)

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

Fed Cite - [referencing tool](#)