

# MECH 4004 ROBOTICS

**Credit Points** 10

**Legacy Code** 300056

**Coordinator** Gu Fang ([https://directory.westernsydney.edu.au/search/name/Gu Fang/](https://directory.westernsydney.edu.au/search/name/Gu%20Fang/))

**Description** The aim of this subject is to develop an understanding of the basic concepts involved in Robotics. The kinematics, dynamics, control and sensing aspects in robotics will be introduced. In addition, the concepts of artificial intelligence (AI) and their applications in robotics will also be introduced. There will be considerable use of MATLAB in the subject.

**School** Eng, Design & Built Env

**Discipline** Mechanical and Industrial Engineering and Technology, Not Elsewhere Classified.

**Student Contribution Band** HECS Band 2 10cp

Check your fees via the Fees ([https://www.westernsydney.edu.au/currentstudents/current\\_students/fees/](https://www.westernsydney.edu.au/currentstudents/current_students/fees/)) page.

**Level** Undergraduate Level 4 subject

**Pre-requisite(s)** MECH 3004

## Restrictions

Successful completion of 200 credit points.

## Learning Outcomes

On successful completion of this subject, students should be able to:

1. analyse and develop mathematical models of a robot.
2. design suitable controllers for robot systems.
3. understand the use of sensors in robots.
4. appreciate the fundamental aspects of artificial neural networks and fuzzy logic systems.
5. undertake the design and implementation of artificial intelligence in robot applications.
6. Effectively communicate their results via professional report writing.
7. Work as a team to complete different learning tasks that include lab experiments and team assignments.

## Subject Content

Robot kinematics and dynamics  
 Robot trajectory planning and control  
 Robot sensing  
 Artificial neural networks  
 Fuzzy logic control  
 Recent developments in robotics

## Assessment

The following table summarises the standard assessment tasks for this subject. Please note this is a guide only. Assessment tasks are regularly updated, where there is a difference your Learning Guide takes precedence.

Type	Length	Percent	Threshold	Individual/ Group Task	Mandatory
Professional Task	10 A4 pages each (Part A and C) 15 pages Report (Part B) About 350 words each page	50	N	Group/ Individual	N
Practical	3 hours per 10 practical		N	Group/ Individual	N
Final Exam	2 hours	40	N	Individual	Y

Teaching Periods

## Sydney City Campus - Term 2 (2024)

### Sydney City

#### On-site

**Subject Contact** Peter Lendrum ([https://directory.westernsydney.edu.au/search/name/Peter Lendrum/](https://directory.westernsydney.edu.au/search/name/Peter%20Lendrum/))

View timetable ([https://classregistration.westernsydney.edu.au/even/timetable/?subject\\_code=MECH4004\\_24-SC2\\_SC\\_1#subjects](https://classregistration.westernsydney.edu.au/even/timetable/?subject_code=MECH4004_24-SC2_SC_1#subjects))

## Autumn (2025)

### Penrith (Kingswood)

#### On-site

**Subject Contact** Gu Fang ([https://directory.westernsydney.edu.au/search/name/Gu Fang/](https://directory.westernsydney.edu.au/search/name/Gu%20Fang/))

View timetable ([https://classregistration.westernsydney.edu.au/odd/timetable/?subject\\_code=MECH4004\\_25-AUT\\_KW\\_1#subjects](https://classregistration.westernsydney.edu.au/odd/timetable/?subject_code=MECH4004_25-AUT_KW_1#subjects))

## Parramatta City - Macquarie St

#### On-site

**Subject Contact** Gu Fang ([https://directory.westernsydney.edu.au/search/name/Gu Fang/](https://directory.westernsydney.edu.au/search/name/Gu%20Fang/))

View timetable ([https://classregistration.westernsydney.edu.au/odd/timetable/?subject\\_code=MECH4004\\_25-AUT\\_PC\\_1#subjects](https://classregistration.westernsydney.edu.au/odd/timetable/?subject_code=MECH4004_25-AUT_PC_1#subjects))

## Sydney City Campus - Term 1 (2025)

### Sydney City

#### On-site

**Subject Contact** Peter Lendrum ([https://directory.westernsydney.edu.au/search/name/Peter Lendrum/](https://directory.westernsydney.edu.au/search/name/Peter%20Lendrum/))

View timetable ([https://classregistration.westernsydney.edu.au/odd/timetable/?subject\\_code=MECH4004\\_25-SC1\\_SC\\_1#subjects](https://classregistration.westernsydney.edu.au/odd/timetable/?subject_code=MECH4004_25-SC1_SC_1#subjects))

## Sydney City Campus - Term 3 (2025)

### Sydney City

#### On-site

**Subject Contact** Peter Lendrum ([https://directory.westernsydney.edu.au/search/name/Peter Lendrum/](https://directory.westernsydney.edu.au/search/name/Peter%20Lendrum/))

View timetable ([https://classregistration.westernsydney.edu.au/odd/timetable/?subject\\_code=MECH4004\\_25-SC3\\_SC\\_1#subjects](https://classregistration.westernsydney.edu.au/odd/timetable/?subject_code=MECH4004_25-SC3_SC_1#subjects))