MECH 4004 ROBOTICS

Credit Points 10

Legacy Code 300056

Coordinator Gu Fang (https://directory.westernsydney.edu.au/search/name/Gu Fang/)

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/) 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 practical	10	N	Group/ Individual	N
Final Exam	2 hours	40	N	Individual	Y

Teaching Periods

Autumn (2025)
Penrith (Kingswood)
On-site
Subject Contact Gu Fang (https://directory.westernsydney.edu.au/search/name/Gu Fang/)

View timetable (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/)

View timetable (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/)

View timetable (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/)

View timetable (https://classregistration.westernsydney.edu.au/odd/timetable/?subject_code=MECH4004_25-SC3_SC_1#subjects)