

# MECH 7005 ADVANCED ROBOTICS

**Credit Points** 10

**Legacy Code** 300599

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

**Description** This unit is designed to introduce the engineering concepts involved in Robotics. The kinematics, dynamics, control and sensing aspects in robotics will be introduced. In addition, the concepts of artificial intelligence and their applications in robotics will also be discussed and assessed.

**School** Eng, Design & Built Env

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

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

**Level** Postgraduate Coursework Level 7 subject

**Incompatible Subjects** LGYA 5817 - Advanced Robotics LGYA 5833 - Mobile Robotic Systems

## Restrictions

Students must be enrolled in a postgraduate program

## Assumed Knowledge

Some Knowledge of MATLAB/Simulink.

## Learning Outcomes

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

1. Analyse and develop mathematical models of an industrial robot.
2. Design advanced controllers for robot systems.
3. Analyse and apply sensors in robots.
4. Design and implement artificial intelligence in robot applications.

## Subject Content

1. Robot kinematics
2. Robot dynamics
3. Robot trajectory planning
4. Robot controller design
5. Sensing in robotics
6. Artificial neural networks and fuzzy logic and their applications 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.

Item	Length	Percent	Threshold	Individual/ Group Task
Practical	No more than 20 3 pages for each lab.		N	Individual

Numerical Problem Solving	no more than 20 10 pages	N	Individual
Professional Task	No more than 30 15 pages	N	Individual
Professional Task	No more than 30 15 pages	N	Group

Teaching Periods

## Autumn

### Parramatta City - Macquarie St

#### Day

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View timetable ([https://classregistration.westernsydney.edu.au/even/timetable/?subject\\_code=MECH7005\\_22-AUT\\_PC\\_D#subjects](https://classregistration.westernsydney.edu.au/even/timetable/?subject_code=MECH7005_22-AUT_PC_D#subjects))