

# MECH 3005 MECHANICAL DESIGN

**Credit Points** 10

**Legacy Code** 300764

**Coordinator** Mobarak Hossain (<https://directory.westernsydney.edu.au/search/name/Mobarak Hossain/>)

**Description** This subject introduces students to the design of machine components providing a link between engineering science and practice. Students will examine the design of machine components to ensure their functionality, strength and durability in order to identify and provide innovative solutions to complex real-world problems. Knowledge gained in this subject will benefit students aspiring to careers in mechanical and mechatronic engineering.

**School** Eng, Design & Built Env

**Discipline** Mechanical Engineering

**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 3 subject

**Pre-requisite(s)** MECH 2003 AND MECH 2001

**Equivalent Subjects** MECH 3003 - Design of Servo-Systems

**Assumed Knowledge**

This subject assumes that the student has undertaken first and second year studies in Western Sydney University engineering programs or equivalent.

## Learning Outcomes

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

1. Apply knowledge of science and engineering fundamentals in mechanical design.
2. Apply engineering design methodologies that can assist the design of machine components.
3. Manage complex mechanical engineering design projects in a team working environment.
4. Determine the integrity of structures and machines, to design the safe for machine components.
5. Design a creative and innovative solution to the complex real-world STEM projects.
6. Communicate concepts and designs in a range of formats to a diverse audience, and in an ethical manner.
7. Collaborate with team members from diverse backgrounds in a responsible way.

## Subject Content

1. The design process – specifying problems and generating solutions
2. Making decisions – decision-making strategies, cost benefit analysis, economic and human factors
3. Engineering materials in design
4. CAD Modelling

5. Design for machine components
6. Structural integrity in engineering design

## 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
Numerical Problem Solving	6 pages (each)	30	N	Individual	N
Practical	5 pages (each)	30	N	Individual	N
Report	6000 words	30	Y	Group	Y
Presentatio	10 minutes	10	N	Individual	N

### Prescribed Texts

- Mott, RL 2018 Machine elements in mechanical design, 6th Ed., NY: Pearson.
- Mott, RL 2013 Machine elements in mechanical design, 5th Ed., Pearson/Prentice Hall, Upper Saddle River, N.J.

### Teaching Periods

## Autumn (2025)

### Penrith (Kingswood)

#### On-site

**Subject Contact** Mobarak Hossain (<https://directory.westernsydney.edu.au/search/name/Mobarak Hossain/>)

View timetable ([https://classregistration.westernsydney.edu.au/odd/timetable/?subject\\_code=MECH3005\\_25-AUT\\_KW\\_1#subjects](https://classregistration.westernsydney.edu.au/odd/timetable/?subject_code=MECH3005_25-AUT_KW_1#subjects))

### Parramatta City - Macquarie St

#### On-site

**Subject Contact** Mobarak Hossain (<https://directory.westernsydney.edu.au/search/name/Mobarak Hossain/>)

View timetable ([https://classregistration.westernsydney.edu.au/odd/timetable/?subject\\_code=MECH3005\\_25-AUT\\_PC\\_1#subjects](https://classregistration.westernsydney.edu.au/odd/timetable/?subject_code=MECH3005_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=MECH3005\\_25-SC1\\_SC\\_1#subjects](https://classregistration.westernsydney.edu.au/odd/timetable/?subject_code=MECH3005_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=MECH3005\\_25-SC3\\_SC\\_1#subjects](https://classregistration.westernsydney.edu.au/odd/timetable/?subject_code=MECH3005_25-SC3_SC_1#subjects))