

# ENGR 1018 FUNDAMENTALS OF MECHANICS

Credit Points 10

Legacy Code 300463

Coordinator Adnan Munir (<https://directory.westernsydney.edu.au/search/name/Adnan Munir/>)

**Description** In this subject students acquire knowledge about the action and interaction of forces, moments and couples in two and three dimensions. Students then apply this to the analysis of the equilibrium of single bodies, and of trusses, mechanisms, and transversely loaded beams. In addition, students study the dynamics of a non-rotating body, and a body rotating about a fixed axis. Further, they study the friction between bodies. Students conduct experiments to see how the lecture content applies to the real world, and make extensive use of vector algebra.

**School** Eng, Design & Built Env

**Discipline** Other Engineering And Related Technologies

**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 1 subject

**Equivalent Subjects** ENGR 1020 Fundamentals of Mechanics (WSTC)  
ENGR 1019 Fundamentals of Mechanics (WSTC Assoc Deg)

## Learning Outcomes

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

1. Use equilibrium to evaluate unknown reactions, internal loads and represent distributed forces.
2. Evaluate the internal forces in planar trusses, and mechanisms.
3. Calculate the acceleration of a body under the action of an unbalanced force or couple.
4. Analyse static and kinetic friction.
5. Construct bending moment and shear force diagrams.
6. Take measurements in the real world, and use them to verify the theory presented in the lectures.

## Subject Content

Statics in two dimensions

Statics in three dimensions

Translational Dynamics

Rotational Dynamics

Beam Diagrams

## 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	Two 3-hour practical labs for 5 different experiments	20	Y	Individual	Y
Numerical Problem Solving	12 tutorial sets with 5-10 questions (each)	12	Y	Individual	Y
Numerical Problem Solving	1 hour	34	N	Individual	N
Numerical Problem Solving	1 hour	34	N	Individual	N

## Prescribed Texts

- Meriam, JL & Kraige, LG 2013, Engineering mechanics : statics, 7th, SI edn, Wiley, Singapore.
- Hibbler, RC, 2017, Engineering Mechanics Statics, 14th Edition, Pearson, Hoboken

## Teaching Periods

### Sydney City Campus - Term 2 (2025)

#### Sydney City

##### On-site

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

View timetable ([https://classregistration.westernsydney.edu.au/odd/timetable/?subject\\_code=ENGR1018\\_25-SC2\\_SC\\_1#subjects](https://classregistration.westernsydney.edu.au/odd/timetable/?subject_code=ENGR1018_25-SC2_SC_1#subjects))

### Spring (2025)

#### Penrith (Kingswood)

##### On-site

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

View timetable ([https://classregistration.westernsydney.edu.au/odd/timetable/?subject\\_code=ENGR1018\\_25-SPR\\_KW\\_1#subjects](https://classregistration.westernsydney.edu.au/odd/timetable/?subject_code=ENGR1018_25-SPR_KW_1#subjects))

### Parramatta City - Macquarie St

##### On-site

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

View timetable ([https://classregistration.westernsydney.edu.au/odd/timetable/?subject\\_code=ENGR1018\\_25-SPR\\_PC\\_1#subjects](https://classregistration.westernsydney.edu.au/odd/timetable/?subject_code=ENGR1018_25-SPR_PC_1#subjects))