

MATH 1010 FUNDAMENTALS FOR ENGINEERING STUDIES (WSTC ASSOCD)

Credit Points 10

Legacy Code 700112

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Description This subject serves as an introduction to the key mathematics and physics concepts required to study engineering at a tertiary level. This subject has two major components, physics and mathematics. The physics component includes physical quantities, scalars and vectors, kinematics and dynamics. The mathematics component includes basic arithmetic and algebra, trigonometry, coordinate geometry, relations and functions and introduction to differentiation.

School Eng, Design & Built Env

Discipline Mathematics

Student Contribution Band HECS Band 1 10cp

Check your fees via the Fees (https://www.westernsydney.edu.au/currentstudents/current_students/fees/) page.

Level Undergraduate Level 1 subject

Restrictions

Students must be enrolled in 7022 Associate Degree in Engineering

Assumed Knowledge

Year 10 Mathematics

Learning Outcomes

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

Physics

1. Apply the physical quantities, scalars and vectors, in physics.
2. Explain fundamental concepts of kinetics and solve problems in this area including Motion in a one and two dimensions, Graphing motion, and Relative motion.
3. Explain fundamental concepts of dynamics and solve problems in this area including Newton's Law of Motion, Momentum and Impulse, Conservation of Momentum, Work and Energy, and Conservation of Energy.
4. Perform simple experiments to verify concepts covered in the subject.

Mathematics

5. Apply appropriate arithmetic, algebraic, graphical techniques, and trigonometry to solve theoretical and real-life problems.
6. Use introductory calculus concepts to solve problems involving rates of change.
7. Apply mathematical techniques to model/solve real world problems related to engineering and science.
8. Communicate mathematical ideas in a clear and effective manner, using logical arguments and appropriate notation, in a range of formats.

Subject Content

1. Physics

- a. Mechanics - Physical Quantities - Units and their relationships
- b. Mechanics - Scalars and Vectors - Addition and subtraction
- c. Mechanics - Kinematics
 - Motion in a straight line
 - Motion in two dimensions
 - Graphing motion
 - Relative motion
- d. Mechanics - Dynamics
 - Newton's Law of Motion
 - Momentum and Impulse

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
Practical	60 min (30 min each) Online	10	N	Individual
Numerical Problem Solving	50 mins	30	N	Individual
Applied Project	Model + 500 words	30	N	Group
Case Study	40 min	30	N	Individual

Prescribed Texts

- Grove, M., 2014, Maths in Focus: Mathematics Preliminary Course, Revised 2nd edition, 2014, Nelson Cengage Learning Australia, Melbourne.
- The College Physics Student Workbook
- The College Physics practical simulation workbook

Teaching Periods

Quarter 1 (2024)

Online

Online

Subject Contact Abbas Ranjbar (<https://directory.westernsydney.edu.au/search/name/Abbas%20Ranjbar/>)

View timetable (https://classregistration.westernsydney.edu.au/even-timetable/?subject_code=MATH1010_24-Q1_ON_2#subjects)