# Program Information

The Diploma of Engineering provides foundation knowledge in mathematics, an understanding of engineering practices, and specialised topics in civil, electrical, mechanical and mechatronic engineering, enabling students to pursue engineering degrees Adelaide University.

All Engineering students are required to complete Mathematics for Study (MMS001) and Language Development Module 1 (LDM100) in their first trimester (unless exempted). Although MMS001 and LDM100 do not count towards the study load or GPA, a non-graded pass is required for the program of study. **A non-graded pass in LDM100 is required for graduation.**

| Stage 1 | | | Study Load | Units |
|---|---|---|---|---|
| ESS001 | Essential Study Skills | | 25% | 4.5 |
| ITN002 | Information and New Media Technologies | | 25% | 4.5 |
| ADM001 | Advanced Mathematics 1 | (Pre-requisite for ADM002) | 25% | 4.5 |
| CPP002 | Communication, People, Place and Culture | | 25% | 4.5 |
| ARC002 | Academic Research and Critical Enquiry | | 25% | 4.5 |
| ADM002 | Advanced Mathematics 2 | (Pre-requisite for MATH1063) | 25% | 4.5 |
| PHYS01 | Physics 1 | (Pre-requisite for MENG1012) | 25% | 4.5 |
| PHYS02 | Physics 2 | (Pre-requisite for EEET1027) | 25% | 4.5 |

| Stage 2 | | | Study Load | Units |
|---|---|---|---|---|
| MATH1063 | Mathematical Methods for Engineers 1 | (Pre-requisite for MATH1064) | 25% | 4.5 |
| COMP1045 | Programming Concepts | | 25% | 4.5 |
| ENGG1003 | Sustainable Engineering Practice | | 25% | 4.5 |
| ENGG1004 | Engineering Design and Innovation | | 25% | 4.5 |
| MATH1064 | Mathematical Methods for Engineers 2 | | 25% | 4.5 |
| MENG1012 | Engineering Mechanics **(ML)** | | 25% | 4.5 |
| EEET1027 | Electrical and Electronic Systems **(ML)** | | 25% | 4.5 |
| RENG1005 | Engineering Materials | | 25% | 4.5 |

## Diploma of Engineering Pathway Programs

Please refer to the following website for information on Pathways:

https://saibt.sa.edu.au/adelaide-university/diploma-programs/diploma-of-engineering/

**All classes (unless otherwise specified) are held at City East Campus (CE)**
**(ML) This class is held at Mawson Lakes Campus**

# Program Outline

## Tertiary Preparation

**Language Development Module 1**
This module is designed to provide students with opportunities to review, develop and practice the English language systems and skills required to successfully participate in an undergraduate degree program. Successful completion of this module is required for graduation.

**Mathematics for Study**
This unit provides a foundation in mathematics to provide students with skills to support their future university studies. Students are supported to develop core concepts and skills, and to apply these to solve problems.

## Stage 1

**Essential Study Skills**
In this module students will be provided with an understanding and application of essential study skills, covering independent learning skills and styles, active listening, presentation, and group work skills.

**Information and New Media Technologies**
You will be introduced to the use of the Internet, social media and associated technologies in society and business. Through the module, you will utilise Microsoft Office along with online tools for effective communication and discuss the ethical and security issues related to the use of Information Communication Technologies.

**Communication, People, Place and Culture**
In this unit you are introduced to the basic principles of communication and its role in society and culture. You will investigate the effects of different forms of verbal and non-verbal communication and describe cultural influences on the communication process.

**Academic Research and Critical Enquiry**
This module will introduce you to the basic principles of critical thinking. It also assists you in developing skills needed for the tertiary study environment, including academic reading, listening, and note-taking, as well as written formats and referencing.

**Advanced Mathematics 1**
In this module you will gain a good understanding of calculus required for further studies. You will use algebra to solve mathematical problems involving functions and trigonometry, and gain an introduction to differential calculus.

**Advanced Mathematics 2**
This module further develops your capabilities in calculus to prepare you for the level of mathematics required in Engineering. You will build on your existing algebra knowledge to solve mathematical problems including trigonometric, exponential and logarithmic equations.
*Pre-requisite: Advanced Mathematics 1*

**Physics 1**
In this module you are introduced to the basic concepts of Physics, with a particular focus on motion and heat. You will learn appropriate equations and units for demonstrating different concepts and conduct experiments to analyse and test theories.

**Physics 2**
This module further develops your skills in using the basic concepts of Physics to the level required for the study of engineering focusing on waves, optics, electricity and atomic physics. You will continue to develop your analytical skills, using appropriate diagrams as a form of communicating and discussing discrepancies in your results.

## Stage 2

**Programming Concepts**
This module will allow you to develop an understanding of fundamental programming concepts and the relevance of programming in solving engineering problems. These concepts will be applied through design and implementation of programming code and the use of microcontrollers. The course also covers coding standards and good programming practices, as well as problem solving processes and tools.

**Engineering Design and Innovation**
In this module you will seek to solve practical engineering design problems and to recognise the roles of systems thinking, innovation and creativity in the design process. Topics include basic systems engineering concepts, the engineering design process, design concepts, creativity, innovation and entrepreneurship, test and evaluation processes, and project management principles. This course will also develop 2D and 3D visualisation skills, which are essential to communicating designs.

**Sustainable Engineering Practice**
You will be introduced to the role of the professional engineer, characteristics of modern engineering disciplines, critical analyses and reflective practice, principles of sustainable engineering and development; and practice effective teamwork, report writing, and presentations.

**Mathematical Methods for Engineers 1**
You will be introduced to mathematical concepts relevant to engineering disciplines using both analytic and software approaches. The module includes topics in calculus, trigonometry, and vectors; in particular functions and their graphs, rates of change and derivatives, and integration techniques.
*Pre-requisite: Advanced Mathematics 2*

**Mathematical Methods for Engineers 2**
This module extends mathematical problems solving introduced in Mathematical Methods for Engineers 1. You will cover inverse trigonometric functions, exponential and logarithmic functions, partial derivatives, convergence of infinite series and linear first and second order differential equations.
*Pre-requisite: Mathematical Methods for Eng. 1*

**Engineering Materials**
The module will introduce you the properties, testing, performance, manufacture and selection of materials in engineering. The module covers the structure and properties of materials, and examines the atomic structure, bonding, micro and macro structures and crystals. It explores the mechanical, electrical and physical properties of materials and investigates the types, properties and strengthening mechanisms of metals and alloys. Additionally, the types and characteristics of polymers, ceramics and composites are studied.

**Engineering Mechanics**
This module provides foundational knowledge of Statics and a basic understanding of Dynamics to prepare students to design, model and analyse structural and mechanical systems. You will develop problem-solving skills to model and analyse; forces, moments and their effects on the equilibrium state of particles, rigid bodies and structural members.
*Pre-requisite: Physics 1*

**Electrical and Electronic Systems**
This module will introduce you to the basic principles of electrical systems and electronic circuits. Electronic circuits will be described in terms of basic electrical quantities, components, and circuit analysis methods. Electrical systems such as power supply will be introduced in the context of renewable and non-renewable supply, transmission and storage.
*Pre-requisite: Physics 2*

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