

DIPLOMA OF SCIENCE (ENGINEERING STUDIES) (YEAR 2)

This program is specially designed for students wishing to enrol in the wide range of programs offered by ECU's School of Engineering. ECU Engineering programs are structured heavily around practical learning; you will have the opportunity to work with real hardware, not just simulation packages. Teaching facilities include advanced laboratories with modern industry-standard equipment. This program is taught on ECU's state-of-the-art ECU Joondalup Campus West.

The program consists of 8 units of study and can be completed over 2 or 3 trimesters. Students who complete the Diploma of Science (Engineering Studies) (Year 2) at ECC will receive up to 8 units (120 credit points) advanced standing, the equivalent of the first year, in the respective Bachelor degree at ECU. A minimum of 50 percent pass in all units is required for progression to ECU.

UNIT DESCRIPTORS

PHY100 – Introductory Physics (not for credit)

This unit is designed to provide students with knowledge in a broad range of physics concepts, and to help students identify the impact of physics and technology on society. It is designed for those who do not have a physics background at secondary level but wish to study engineering or physical sciences at the university. This unit covers theory and practical investigations, using logical and analytical thinking, as well as developing skills in communicating scientific information. Physics principles and methods applicable to Newton's Laws, forces, heat, motion, electricity, wave motion and optics are included.

ENS1162D – Electrical Engineering 1A

This unit introduces a range of concepts fundamental to fields of electrical and electronic engineering, including circuit analysis, digital/analogue systems, and device modelling. It develops an understanding of electrical circuits and

systems through lectures and laboratory work.

Students undertake a project involving simple circuit design and prototyping.

ENM1102D – Engineering Drawing and Computer Aided Design (CAD)

This unit introduces students to technical drawing and the use of two-dimensional computer-aided design tools. Students will progress from hand drawings which meet relevant Australian standards to the use of computer-aided design tools for engineering drawings. Although the emphasis is on mechanical drawings, an introduction to electrical drawings is also provided.

ENS1101D – Engineering Mechanics

(Prerequisite: Year 12 Physics or PHY100 or equivalent AND Year 12 Mathematics MAT 3C/3D or MAT137 or equivalent Calculus subject)

This unit covers principles of engineering mechanics with a focus primarily on statics and application of these principles to problems related to engineering structures and systems. Students draw free-body diagrams to describe structural elements/systems;

and use principles of statics to resolve forces and movements in engineering systems.

ENS1154D – Introduction to Engineering

This unit introduces students to the discipline and practice of professional engineering. The role of engineers and some of the important concepts that characterise the engineering approach to solving technical problems are described. In addition, the importance of appropriate communication and the management aspects of engineering are introduced.

ENS1253D – Electrical Engineering 1B

(Prerequisites: ENS1162D Electrical Engineering 1A and MAT1236D – Calculus).

This unit builds on concepts introduced in Electrical Engineering 1A and introduces higher level concepts. Students apply fundamental circuit analysis concepts to determine operation and predict performance of simple DC and AC linear circuits; undertake problem identification, formulation, solution and solution verification of small-scale DC and AC electrical circuits.

Diploma of Science (Engineering Studies) (Year 2) continued

MAT1163D – Linear Algebra

This unit provides an introduction to the concepts of linear algebra; vectors in 2, 3 and n-dimensional space, analytic geometry, matrices and matrix arithmetic, solution of systems of linear equations, eigenvalues and eigenvectors.

MAT137 – Introductory Applied Maths (not for credit)

This mathematics unit is for students who wish to study Engineering, Physical Sciences, or technical, maths-related courses at university. Topics include mathematical modelling using functions

and graphs; concepts, techniques and applications of differential and integral calculus; and analytic geometry. Students will solve problems linked to applications of differentiation (solving optimisation problems), integration (area and volume) and analytic geometry (properties of vectors in 2 and 3-dimensional space and solution of linear systems of equations).

MAT1236D – Calculus

(Prerequisite: Year 12 Calculus MAT137 – Introductory Applied Maths or equivalent)

This unit deals with differential and integral calculus of functions of a single variable

and introduces students to sequences and series, first order differential equations and complex arithmetic.

ENS1115D – Materials and Manufacturing

This unit develops students' knowledge of common engineering materials and enables them to select materials based on their inherent properties.



| Compulsory Pre-Requisite Units (for those without relevant Year 12 equivalent background) | Students will complete the units below: | Entry into ECU Year 2 |
|--|--|---|
| PHY100 – Introductory Physics This unit is for students who do not have the Physics pre-requisite (background) for ENS1101D - Engineering Mechanics. Passing PHY100 does not qualify for any unit exemption at ECU. | ENS1162D – Electrical Engineering 1A | <ul style="list-style-type: none"> • Bachelor of Engineering Honours – 8 units (120 credits points) majors in: Civil, Civil and Environmental, Computer Systems, Electrical Power, Electrical and Renewable Energy, Electronics and Communications, Instrumentation Control and Automation, Mechanical, Mechatronics, Chemical, Petroleum • Bachelor of Technology (Aeronautical) – 8 units (120 credit points) • Bachelor of Technology (Electronic and Computer Systems) – 8 units (120 credit points) • Bachelor of Technology (Motorsports) – 8 units (120 credit points) • Bachelor of Technology (Engineering) – 8 units (120 credit points) majors in: Chemical, Civil, Mechanical, Electrical, Electronics and Communications • Bachelor of Engineering Science – 8 units (120 credit points) |
| | ENM1102D - Engineering Drawing & Computer Aided Design (CAD) | |
| MAT137 – Introductory Applied Maths This unit is for students who do not have the sufficient background in Calculus (Year 12 or equivalent). Students must pass MAT137 before enrolling in Calculus and Engineering Mechanics. Passing MAT137 does not qualify for any unit exemption at ECU. | MAT1236D - Calculus | |
| | ENS1154D - Introduction to Engineering | |
| Students who intend to major in Bachelor of Engineering (Chemical) must have Year 12 Chemistry or pass both SCC1123 and SCC1226 at ECU. One unit (SCC1123 or SCC1226) can be chosen as an elective that will count towards the completion of the course requirements. | ENS1101D - Engineering Mechanics | |
| | MAT1163D - Linear Algebra | |
| International students must study a full-time study load. | ENS1253D - Electrical Engineering 1B | |
| ECC reserves the right to cancel classes due to insufficient demand. Timetable clashes may be unavoidable. | ENS1115D – Materials and Manufacturing | |

Methods of assessment at ECC may differ depending on the program and subjects you choose. Most subjects will be assessed through a combination of written examinations and assignments, essays, presentations, seminars and tutorial participation. Some coursework will include group-based projects and practical activities. At the beginning of each unit, students are given an outline that includes due dates for the completion of assignments. Students who fail to meet these submission deadlines may be penalised even though the work was completed. Attending all classes is essential in order to be successful at ECC. **Flyer is current as of 7 February 2019.**

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Edith Cowan College is part of the Navitas Group

CRICOS provider codes: ECC 01312J; Edith Cowan University IPC 00279B