Program Code

BENGH

Program Minimum Units

102

Standard Duration

4 Years

Program Faculty

Faculty of Engineering, Computer and Math Sciences

AQF Level

08

Academic Year

2019

These Program Rules should be read in conjunction with the University's policies (http://www.adelaide.edu.au/policies).

Overview

This program embraces both electrical and electronic engineering and provides graduates with a wide range of fundamental scientific knowledge relevant to electrical and electronic engineering. An emphasis is placed on underlying principles and techniques so that graduates will be able to learn and apply new technologies as they emerge in the future. The first two years of this degree provide a solid foundation in electronics, physics, mathematics and computer programming. This background means that graduates have the opportunity to work in many specialist areas, and are prepared with lifelong learning skills so that they are able to change specialisations over the course of their careers. All Engineering students will complete a common first year before branching out into their disciplines, majors. Students can chose a major in Communication Systems, Computer Engineering, Cybersecurity, Defence Systems, Medical Technologies, Smart Technologies and Renewable Energy, as well as a choice of minors in Humanitarian and Entrepreneurship. Beginning in the second year of the degree, the focus shifts towards learning new and more advanced electrical and electronics technologies. In the final year of the program, students can specialize in a particular area by studying advanced courses and by completing a capstone project that further develop research, technical and professional skills.

The Bachelor of Engineering (Honours) (Electrical and Electronic) is an AQF Level 08 qualification with a standard full-time duration of 4 years. This program is accredited by Engineers Australia and graduates of the program qualify for professional membership of Engineers Australia.

Conditions

Condition of enrolment

Interruption of program: Students must apply for permission from the Executive Dean or delegate before taking a Leave of Absence. Any extension of the leave without approval will result in the loss of place in the program but an application may be made to be re-admitted to the program subject to the admission procedures in place at the time.
Academic Program Rules for Bachelor of Engineering (Honours) (Electrical and Electronic) (BE(Hons)(Elec&Elec))

There shall be a Bachelor of Engineering (Honours) (Electrical and Electronic) (BE(Hons)(Elec&Elec)).

Qualification Requirements

Academic Program

To qualify for the degree of Bachelor of Engineering (Honours) (Electrical and Electronic) the student must complete satisfactorily a program of study consisting of the following courses with a combined total of not less than 102 units, comprising:

1. Courses to the value of 102; Core courses with a minimum value of 90 units and Elective courses with a minimum value of 6 units, with the option of a major in one of the following:
   - Communication Systems
   - Computer Engineering
   - Cybersecurity
   - Defence Systems
   - Medical Technologies
   - Renewable Energy
   - Smart Technologies
2. A Humanitarian or Entrepreneurship minor can be presented in lieu of available electives within the program
3. Engineering Practice courses include work placements. A total of 8 weeks of approved engineering work placements is required.
4. Unless exempted, International students are required to take ENG 1011 Introduction to Engineering EAL in lieu of ENG 1001 Introduction to Engineering as advised by the Faculty.

Bachelor of Engineering (Honours) (Electrical and Electronic)

To satisfy the requirements for Bachelor of Engineering (Honours) (Electrical and Electronic) students must complete courses to the value of 102 units.

Electrical and Electronic Core Courses

All of the following courses must be completed:

COMP SCI 1102 Object Oriented Programming (3 units)
ELEC ENG 1100 Analog Electronics (3 units)
ELEC ENG 1102 Digital Electronics (3 units)
ELEC ENG 2100 Digital Systems (3 units)
ELEC ENG 2101 Electronic Circuits (3 units)
ELEC ENG 2102 Electric Energy Conversion (3 units)
ELEC ENG 2103 Design & Innovation (3 units)
ELEC ENG 2104 Digital Signal Processing (3 units)
ELEC ENG 2106 EEE Analysis (3 units)
ELEC ENG 3100 Systems Engineering (3 units)
ELEC ENG 3101 Control (3 units)
ELEC ENG 3103 Engineering Electromagnetics (3 units)
ELEC ENG 4100 Business Management Systems (3 units)
ENG 1001 Introduction to Engineering (3 units)
ENG 1002 Programming (Matlab and C) (3 units)
ENG 3004 Interdisciplinary Professional Practice (3 units)
ENG 3005 Research Methods and Project Management (3 units)
ENG 3100 Engineering Practice 1 (3 units)
ENG 3200 Engineering Practice 2 (3 units)
MATHS 1011 Mathematics IA (3 units)
Bachelor of Engineering (Honours) (Electrical and Electronic) (BE(Hons)(Elec&Elec))

MATHS 1012 Mathematics IB (3 units)
MATHS 2201 Engineering Mathematics IIA (3 units)
MATHS 2202 Engineering Mathematics IIB (3 units)
PHYSICS 1510 Physics IE: Mechanics and Thermodynamics (3 units)

and

Courses - No Major
ELEC ENG 3104 Electric Drive Systems (3 units)
ELEC ENG 3105 Real-Time and Embedded Systems (3 units)
ELEC ENG 3106 Radio Frequency Systems (3 units)
ELEC ENG 3110 Electric Power Systems (3 units)
ENG 4001A Research Project Part A (3 units)
ENG 4001B Research Project Part B (3 units)

Electrical and Electronic Electives - No Major

Courses to the value of 12 units from the following:
COMP SCI 2103 Algorithm Design & Data Structures (3 units)
COMP SCI 3001 Computer Networks & Applications (3 units)
COMP SCI 3006 Software Engineering & Project (3 units)
ELEC ENG 3109 Digital Microelectronics (3 units)
ELEC ENG 3111 Distributed Generation Technologies (3 units)
ELEC ENG 4058 Power Quality & Condition Monitoring (3 units)
ELEC ENG 4061 Image Processing (3 units)
ELEC ENG 4063 Communications (3 units)
ELEC ENG 4067 Antennas & Propagation (3 units)
ELEC ENG 4069 Radar Principles & Systems UG (3 units)
MECH ENG 4064 Renewable Power Technologies (3 units)
MECH ENG 4145 Sustainable Thermal Technologies (3 units)

Communication Systems Major

Major Courses

All of the following courses must be completed:
COMP SCI 2103 Algorithm Design & Data Structures (3 units)
COMP SCI 3001 Computer Networks & Applications (3 units)
ELEC ENG 3106 Radio Frequency Systems (3 units)
ELEC ENG 3108 Telecommunications Principles (3 units)
ELEC ENG 4054 Telecommunications Systems (3 units)
ENG 4001A Research Project Part A (3 units)
ENG 4001B Research Project Part B (3 units)

and

Courses to the value of at least 9 units from the following:
COMP SCI 3007 Artificial Intelligence (3 units)
ELEC ENG 3105 Real-Time and Embedded Systems (3 units)
ELEC ENG 3109 Digital Microelectronics (3 units)
ELEC ENG 4067 Antennas & Propagation (3 units)
ELEC ENG 4061 Image Processing (3 units)
ELEC ENG 4063 Communications (3 units)
ELEC ENG 4069 Radar Principles & Systems UG (3 units)

Computer Engineering Major

Major courses
All of the following courses must be completed:

**COMP SCI 2103 Algorithm Design & Data Structures** (3 units)
**COMP SCI 3001 Computer Networks & Applications** (3 units)
**COMP SCI 3005 Computer Architecture** (3 units)
**ELEC ENG 3105 Real-Time and Embedded Systems** (3 units)
**ELEC ENG 3109 Digital Microelectronics** (3 units)
**ENG 4001A Research Project Part A** (3 units)
**ENG 4001B Research Project Part B** (3 units)

and

Courses to the value of up to 9 units may be taken from the following:

**COMP SCI 3004 Operating Systems** (3 units)
**COMP SCI 3007 Artificial Intelligence** (3 units)
**ELEC ENG 3104 Electric Drive Systems** (3 units)
**ELEC ENG 3108 Telecommunications Principles** (3 units)
**ELEC ENG 4061 Image Processing** (3 units)

**Cybersecurity Major**

**Major Courses**

All of the following courses must be completed:

**COMP SCI 2000 Computer Systems** (3 units)
**COMP SCI 2103 Algorithm Design & Data Structures** (3 units)
**COMP SCI 2201 Algorithm & Data Structure Analysis** (3 units)
**COMP SCI 3004 Operating Systems** (3 units)
**COMP SCI 3307 Secure Programming** (3 units)
**COMP SCI 3308 Cybersecurity Fundamentals** (3 units)
**ENG 4001A Research Project Part A** (3 units)
**ENG 4001B Research Project Part B** (3 units)

and

Courses to the value of up to 6 units may be taken from the following:

**ELEC ENG 3104 Electric Drive Systems** (3 units)
**ELEC ENG 3105 Real-Time and Embedded Systems** (3 units)
**ELEC ENG 3106 Radio Frequency Systems** (3 units)
**ELEC ENG 3110 Electric Power Systems** (3 units)
**ELEC ENG 4061 Image Processing** (3 units)
**ELEC ENG 4063 Communications** (3 units)

**Defence Systems Major**

**Major Courses**

All of the following courses must be completed:

**ELEC ENG 3106 Radio Frequency Systems** (3 units)
**ELEC ENG 3107 Autonomous Systems** (3 units)
**ELEC ENG 4069 Radar Principles & Systems UG** (3 units)
**ENG 4001A Research Project Part A** (3 units)
**ENG 4001B Research Project Part B** (3 units)
**ENG 4020 Complex Systems Engineering** (3 units)
**ENG 3305 Human Factors** (3 units)
**POLIS 2124 Global Justice and International Order** (3 units)

and

Courses to the value of up to 6 units may be taken from the following:
CEME 3007 Integrated Environment Planning and Impact Assessment (3 units)
ELEC ENG 3105 Real-Time and Embedded Systems (3 units)
ELEC ENG 3108 Telecommunications Principles (3 units)
ELEC ENG 3109 Digital Microelectronics (3 units)
ELEC ENG 3111 Distributed Generation Technologies (3 units)
ELEC ENG 4067 Antennas & Propagation (3 units)

Medical Technologies Major

Major courses

All of the following courses must be completed:
ANAT SC 1102 Human Biology IA (3 units)
ANAT SC 2009 Musculoskeletal Anatomy (3 units)
ELEC ENG 3105 Real-Time and Embedded Systems (3 units)
ELEC ENG 3106 Radio Frequency Systems (3 units)
ELEC ENG 4115 Biomedical Instrumentation (3 units)
ENG 4001B Research Project Part B (3 units)
ENG 4001A Research Project Part A (3 units)
PHYSIOL 2510 Physiology IIA: Heart, Lung & Neuromuscular Systems (3 units)

and

Courses to the value of up to 6 units may be taken from the following:
ELEC ENG 3109 Digital Microelectronics (3 units)
ELEC ENG 4061 Image Processing (3 units)
MECH ENG 4101 Biomechanical Engineering (3 units)
PHYSIOL 3120 Neuromotor Control of Human Movement (3 units)

Renewable Energy Major

Major Courses

All of the following courses must be completed:
CEME 3007 Integrated Environment Planning and Impact Assessment (3 units)
CHEM ENG 4048 Biofuels, Biomass and Wastes (3 units)
ELEC ENG 3110 Electric Power Systems (3 units)
ELEC ENG 3111 Distributed Generation Technologies (3 units)
ENG 4001A Research Project Part A (3 units)
ENG 4001B Research Project Part B (3 units)
MECH ENG 2021 Thermo-Fluids I (3 units)
MECH ENG 4064 Renewable Power Technologies (3 units)

and

Courses to the value of up to 6 units may be taken from the following:
ELEC ENG 3105 Real-Time and Embedded Systems (3 units)
ELEC ENG 4058 Power Quality & Condition Monitoring (3 units)
ELEC ENG 4067 Antennas & Propagation (3 units)
MECH ENG 4145 Sustainable Thermal Technologies (3 units)

Smart Technologies Major

Major Courses

All of the following courses must be completed:
COMP SCI 2103 Algorithm Design & Data Structures (3 units)
COMP SCI 3001 Computer Networks & Applications (3 units)
COMP SCI 4092 Mobile and Wireless Systems (3 units)
Bachelor of Engineering (Honours) (Electrical and Electronic) (BE(Hons)(Elec&Elec))

ELEC ENG 3107 Autonomous Systems (3 units)
ENG 4001A Research Project Part A (3 units)
ENG 4001B Research Project Part B (3 units)
MECH ENG 3032 Micro-Controller Programming (3 units)

and

Courses to the value of up to 9 units may be taken from the following:
ELEC ENG 3109 Digital Microelectronics (3 units)
ELEC ENG 3111 Distributed Generation Technologies (3 units)
ELEC ENG 4058 Power Quality & Condition Monitoring (3 units)
ELEC ENG 4061 Image Processing (3 units)
ELEC ENG 4063 Communications (3 units)
ELEC ENG 4067 Antennas & Propagation (3 units)
ELEC ENG 4069 Radar Principles & Systems UG (3 units)

Entrepreneurship Minor

To satisfy the requirements for Entrepreneurship Minor students must complete courses to the value of 18 units.

All of the following courses must be completed:
ENG 1001 Introduction to Engineering (3 units)
ENG 3004 Interdisciplinary Professional Practice (3 units)
ENTREP 1006 Opportunity Assessment (3 units)
ENTREP 1011 Entrepreneurship Foundations and Mindset (3 units)

and

Courses to the value of 3 units from the following:
ENTREP 3000 Innovation and Creativity (3 units)
ENTREP 3011 Startup Methodologies (3 units)

and

Courses to the value of 3 units from the following:
ENTREP 2051 Prototyping: Possibilities to Product (3 units)
ENTREP 3015 Entrepreneurial Leadership (3 units)
ENTREP 3017 Driving Decisions: Legal (3 units)
ENTREP 3900 eChallenge (3 units)
ENTREP 3901 Tech eChallenge (3 units)

Humanitarian Minor

To satisfy the requirements for Humanitarian Minor students must complete courses to the value of 18 units.

All of the following courses must be completed:
ENG 1001 Introduction to Engineering (3 units)
ENG 3004 Interdisciplinary Professional Practice (3 units)
ENG 3201 Essentials of Humanitarian Practice (3 units)
ENG 3202 Shelter (3 units)
ENG 3203 Humanitarian Logistics (3 units)
ENG 3204 Water, Sanitation and Hygiene (3 units)

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