

ME (ELECTRICAL AND ELECTRONIC) ENGINEERING

Overview

NFQ Level 9, Major Award

No student may register for Fifth Year of the ME in Electrical and Electronic Engineering until he/she has passed the Fourth University Examination ME Pathway in Electrical and Electronic Engineering (<https://ucc-ie-public.courseleaf.com/programmes/eembp/>). In order to be admitted to the Final ME (Examination in Process and Chemical) Degree Examination a student must have satisfactorily attended, subsequent to passing the Fourth ME Pathway University Examination in Process and Chemical Engineering, prescribed modules to the value of **60** credits.

Programme Requirements

For information about modules, module choice, options and credit weightings, please go to Programme Requirements (p. 1).

Programme Requirements

Code	Title	Credits
Year 1 - Engineering		
Students take 60 credits as follows:		
<i>Core Modules</i>		
CE1003	Introduction to Structural and Civil Engineering	5
CE1005	Engineering Computation and Problem Solving	5
CM1001	Chemistry for Engineers	5
EE1007	Introduction to Electrical and Electronic Engineering	5
MA1011	Mathematical Methods I	5
MA1012	Mathematical Methods II	5
ME1002	Engineering Thermodynamics	5
NE1001	Introduction to Energy Engineering	5
PE1003	Introduction to Process and Chemical Engineering	5
PY1006	Physics for Engineers II	5
PY1012	Physics for Engineers I	10
Year 2 - Electrical and Electronic Engineering		
Students take 60 credits as follows:		
<i>Core Modules</i>		
EG2002	Numerical Methods and Programming	5
CE2001	Solid and Structural Mechanics I	5
EE2011	Digital Electronics	5
EE2012	Linear Circuit Analysis	5
EE2013	Non-Linear Circuit Analysis	5
EE2014	Signals and Systems 1	5
EE2015	Signals and Systems 2	5
EE2016	Electrical Power Engineering I	5
EE2017	Electrical Power Engineering II	5
EE2020	Semiconductor Devices	5
MA2013	Mathematics for Engineering	5
ST1051	Introduction to Probability and Statistics	5
Year 3 - Electrical and Electronic Engineering		
Students take 60 credits as follows:		

<i>Core Modules</i>		
EE3011	Power Electronics & AC Machines and Systems	5
EE3012	Electric Vehicle Energy Systems	5
EE3013	Electromagnetic Fields for Engineers	5
EE3014	Signal Processing	5
EE3015	Telecommunications I	5
EE3016	Control Engineering I	5
EE3018	Analogue Integrated Circuits	5
EE3019	Digital Integrated Circuits	5
EE3020	Engineering Applications of Machine Learning	5
EE3022	Electronic Circuit Design	5
EE3023	Electronic Embedded Systems	5
ME3003	Mechanical Systems	5

Year 4 - ME Pathway Electrical and Electronic Engineering

Students take **60** credits as follows - all listed core modules (**30** credits) in Part A and a Placement module (**30** credits) in Part B:

<i>Core Modules</i>		
<i>Part A</i>		
EE4002	Control Engineering II	5
EE4010	Electrical Power Systems	5
EE4014	Industrial Automation and Control	5
EE4016	Transmission Lines	5
EE4019	Photonic Signals and Systems Application	5
EE4022	Analogue IC Design	5
<i>Part B</i>		
<i>Core Modules</i>		
EE6060	Electrical and Electronic Engineering Work Placement	30

<i>Part B</i>		
<i>Core Modules</i>		
EE6060	Electrical and Electronic Engineering Work Placement	30

Year 5 - ME (Electrical and Electronic Engineering)

Students take **60** credits as follows – all listed core modules (**30** credits) and **30** credits of elective modules:

<i>Core Modules</i>		
EE6050	ME Research Project	20
MG4052	Management in Practice	5
MG6315	Project Management	5
<i>Elective Modules</i>		
30		

Students take a maximum of **10** credits from Group I (if not taken in Year 4) and a minimum of **20** credits from Group II: ¹

<i>Group I Modules</i>		
EE4001	Energy Systems, Power Electronics and Drives (5)	
EE4004	Telecommunications II (5)	
EE4012	Biomedical Systems (5)	
EE4023	Digital IC Design (5)	
NE4008	Photovoltaic Systems (5)	
<i>Group II Modules</i>		
CS6506	Programming in Python (5)	
CS6507	Programming in Python with Data Science Applications (5)	
EE6034	Optical Communications and Optoelectronics (5)	
EE6036	Design of RF Integrated Circuits (5)	
EE6041	Advanced Digital Signal Processing (5)	
EE6042	Frequency Synthesizers for Wireless and Cellular Systems (5)	

EE6044	Advanced Analogue IC Design (5)
EE6045	Data Converter Techniques: Circuits and Architectures (5)
EE6046	Introduction to Micro Electromechanical Systems (MEMS) (5)
EE6048	Smart Grids (5)
ME6008	Robotics (5)
ME6012	Advanced Robotics (5)
Total Credits	300

¹ The sum of units taken from Groups I and II must equal **30** credits. A student may not study more than **20** credits from Groups I and II in Semester 1. A student may not study more than **20** credits from Groups I and II in Semester 2. Modules in Group I and Group II are offered subject to availability and timetabling constraints. Alternative modules may be offered. The selection of any elective module is subject to meeting any pre-requisite and co-requisite requirements specified in the Book of Modules. The choice of modules is subject to the approval of the Head of Discipline of Electrical and Electronic Engineering.

Examinations

Full details and regulations governing Examinations for each programme will be contained in the *Marks and Standards Book* and for each module in the *Book of Modules*.

Programme Learning Outcomes

Programme Learning Outcomes for ME (Electrical and Electronic) (NFQ Level 9, Major Award)

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

- Systematically apply advanced knowledge from mathematics, science and engineering to solve complex and/or unbounded problems in Process and Chemical Engineering;
- Apply information technology and software development techniques to visualise, analyse and solve a broad range problems in Process and Chemical Engineering to an advanced level;
- Demonstrate the ability to adjust, self-evaluate and critically alter practice in response to evolving project requirements;
- Design components and systems to the standard required of a professional engineer demonstrating logical thinking and imaginative skills to provide the most appropriate solution;
- Critically evaluate the engineering, economic, environmental and societal impacts of proposed solutions;
- Critically evaluate published work at the forefront of the field in the context of a particular engineering solution;
- Work effectively as an individual, in teams and in multi-disciplinary settings with the ability to appropriately plan and meet the role responsibilities, including leadership qualities;
- Communicate effectively engineering-related information and the results of one's own work (in both oral and written form) while demonstrating appreciation of the expertise of the target audience;
- Demonstrate knowledge and understanding of the need for high ethical standards in their professional practice of engineering to the standards expected of a Chartered Engineer.