

MENGSC (ELECTRICAL AND ELECTRONIC ENGINEERING)

Overview

NFQ Level 9, Major Award

The MEngSc (Electrical and Electronic Engineering) is a full-time programme running for 12 months from the date of first registration for the programme.

In **Part I** students select modules to the value of **60** credits consisting a **10** credit preliminary research project and **50** credits (with at least 35 credits from Group One and remainder from Group Two). **Part II** consists of either a Dissertation in Electrical and Electronic Engineering (**Option I**) to the value of 30 credits or **Option II** consisting of **10** credits of work placement and a **20** credit research project. Students initially register for **Option I** and may change to **Option II** in agreement with the programme director following approval of the proposed placement. **Options I** and **II** are completed over the summer months and approved by the external examiner.

Modules in **Part I** are offered subject to availability and timetabling constraints. Alternative modules may be offered. The choice of modules is subject to the approval of the Programme Director.

Postgraduate Diploma in Electrical and Electronic Engineering

A candidate, who passes **Part I** but does not achieve an average mark of at least 50% across the taught modules, excluding the Research Project (**EE6019**), or does not achieve a mark of at least 50% in the Research Project (**EE6019**), will be eligible for the award of a Postgraduate Diploma in Electrical and Electronic Engineering (<https://ucc-ie-public.courseleaf.com/programmes/pdeee/>). A candidate, who passes **Part I** and does not wish to proceed to **Part II**, may opt to be conferred with a Postgraduate Diploma in Electrical and Electronic Engineering (<https://ucc-ie-public.courseleaf.com/programmes/pdeee/>).

Programme Requirements

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

Programme Requirements

Code	Title	Credits
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Students take **90** credits as follows:

Part I

Students take **60** credits - Research Report (**10** credits) and elective modules to the value of **50** credits:

Core Modules

EE6019	Research Report	10
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<i>Elective Modules</i>		<i>50</i>
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Students take **50** credits from the following:

Group One

Students take at least **35** credits from the following:

EE6024	Engineering Machine Learning Solutions (5)
EE6034	Optical Communications and Optoelectronics (5)
EE6035	Electrical Power Systems (5)
EE6036	Design of RF Integrated Circuits (5)

EE6041	Advanced Digital Signal Processing (5)
EE6042	Frequency Synthesizers for Wireless and Cellular Systems (5)
EE6043	Design of Digital Integrated Circuits (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)
EE6049	Design of Analogue Integrated Circuits (5)
EE6061	Industrial Automation and Control (5)

Group Two

Students take the remaining credits from Group Two:

CS6322	Optimisation (5)
CS6325	Network Security (5)
CS6327	Internet of Things: Technology and Application (5)
CS6506	Programming in Python (5)
CS6507	Programming in Python with Data Science Applications (5)
EE4001	Energy Systems, Power Electronics and Drives (5)
EE4002	Control Engineering II (5)
EE4004	Telecommunications II (5)
EE4012	Biomedical Systems (5)
EE4019	Photonic Signals and Systems Application (5)
ME6008	Robotics (5)
ME6012	Advanced Robotics (5)
NE4008	Photovoltaic Systems (5)
ST6030	Foundations of Statistical Data Analytics (10)

Part II

Select one of the following Options: 30

Core Modules

Option I

EE6023	Dissertation in Electrical and Electronic Engineering (30)
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Option II

EE6008	Research Project for Placement Students (20)
EE6009	MEngSc Placement (10)

Total Credits	90
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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 MEngSc (Electrical and Electronic Engineering), NFQ Level 9, Major Award

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

- Apply principles from mathematics, science and engineering to solve problems in electrical and electronic engineering and in the related disciplines of microelectronic and mechanical engineering at an advanced level;

- Apply information technology to visualise and analyse problems in electrical and electronic engineering and in the related disciplines of microelectronic and mechanical engineering at an advanced level;
- Identify, formulate, analyse and solve engineering problems;
- Design components and systems to the standard required of a professional engineer, demonstrating logical and lateral thinking to provide the most appropriate solution;
- Critically evaluate the engineering, economic, environmental and societal impacts of proposed design solutions using the technical literature to inform their opinions;
- Work effectively as an individual and in teams with the ability to appropriately plan;
- Undertake a substantive individual engineering project and produce a detailed dissertation objectively describing and discussing the outcomes, and critically evaluating published work in that context;
- Communicate effectively engineering-related information and the results of one's own work (in both oral and written form), demonstrating appreciation of the expertise of the target audience;
- Maintain high ethical standards in their professional practice of engineering to a standard consistent with that of a Chartered Engineer.