

# ME (ENERGY) ENGINEERING

## Overview

### NFQ Level 9, Major Award

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

**NOTE:** Choice of modules is subject to the approval of the Programme Director.

## Programme Requirements

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

## Programme Requirements

Code	Title	Credits
<b>Year 1 - Engineering</b>		
Students take <b>60</b> 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
<b>Year 2 - Energy Engineering</b>		
Students take <b>60</b> credits as follows:		
<i>Core Modules</i>		
EG2002	Numerical Methods and Programming	5
CE2001	Solid and Structural Mechanics I	5
CE2003	Fluids I	5
CE2004	Fluids II	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
NE2001	Primary Energy Engineering	5
ST1051	Introduction to Probability and Statistics	5
<b>Year 3 - Energy Engineering</b>		
Students take <b>60</b> credits as follows:		
<i>Core Modules</i>		

CE3006	Construction Project Management	5
CE3007	Hydraulics I	5
CE3009	Environmental Engineering- Wet	5
EE3011	Power Electronics & AC Machines and Systems	5
EE3012	Electric Vehicle Energy Systems	5
EE3016	Control Engineering I	5
ME3003	Mechanical Systems	5
ME3004	Applied Thermodynamics and Work Transfer	5
NE3002	Energy in Buildings	5
NE3003	Sustainable Energy	5
NE3004	Transportation and Energy	5
NE3005	Energy Systems Modelling	5

### Year 4 - ME Pathway Energy 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:

#### Part A

##### Core Modules

EE4001	Energy Systems, Power Electronics and Drives	5
EE4002	Control Engineering II	5
EE4010	Electrical Power Systems	5
EE4014	Industrial Automation and Control	5
NE4002	Wind Energy	5
NE4008	Photovoltaic Systems	5

#### Part B

##### Core Modules

NE6060	ME Energy Placement	30
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### Year 5

Students take **60** credits as follows - all listed core modules (**45** credits) and elective modules to the value of **15** credits:

##### Core Modules

NE4007	Computer Aided Design VII (Heating, Ventilation and Air Conditioning)	5
NE6005	Ocean Energy	5
NE6011	Advanced Energy Systems Modelling	5
NE6014	Energy Innovation	5
NE6015	Data Analytics for Engineering	5
NE6017	ME Project	20

##### Elective Modules

15

Students take modules to the value of **15** credits from the following:

CE4024	Progressing Toward Sustainable Industry (5)	
CE6043	Harbour and Coastal Engineering (5)	
CS6322	Optimisation (5)	
MG4052	Management in Practice (5)	
NE6004	Sustainability, Bioenergy and Circular Economy Systems (5)	
NE6010	Offshore Wind Energy (5)	
NE6016	Energy Systems in Buildings (5)	
PE6031	Carbon Geocycles and Capture Utilisation and Storage (5)	
EE6048	Smart Grids (5)	

**Total Credits**

**300**

## 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 (Energy) (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 Energy Engineering;
- Apply information technology and software development techniques to visualise, analyse and solve a broad range problems in Energy 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.