ME (PROCESS AND CHEMICAL) ENGINEERING

Overview

No student may register for Fifth Year of the ME in Process and Chemical Engineering until he/she has passed the Fourth ME Pathway University Examination in Process and Chemical Engineering (https://ucc-ie-public.courseleaf.com/programmes/pembp/). 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:		
Core Modules		
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 1	10
Year 2 - Process and Chemical Engineering		
Students take **60** credits as follows:		
Core Modules		
AE2004	Current Trends in Ecology and Environmental Science	5
EG2001	Engineering Mechanics with Transform Methods	5
EG2002	Numerical Methods and Programming	5
CE2001	Solid and Structural Mechanics I	5
CE2003	Fluids I	5
CM2010	Introduction to Organic Chemistry for Process and Chemical Engineers	5
PE2003	Heat Transfer	5
PE2004	Communication and Ethics in Engineering	5
PE2005	Introduction to Biochemical Engineering	5
PE2009	Chemical Reaction Engineering	5
PE2011	Process Plant Design and Commissioning	5
PE2013	Data Analysis for Process and Product Development	5
Year 3 - Process and Chemical Engineering		
Students take **60** credits as follows – all listed core modules (**55** credits) and **5** credits of elective modules:		
Core Modules		
CM3029	Organic Chemistry II for Process and Chemical Engineering	5
CM3030	Fundamentals of Organic Chemistry	5
PE3001	Applied Thermodynamics and Fluid Mechanics	5
PE3002	Unit Operations and Particle Technology	5
PE3003	Phase Equilibrium and Mass Transfer	5
PE3005	Process Equipment; Design, Integrity & Materials	5
PE3007	Process Dynamics and Control	5
PE3011	Sustainability and Environmental Protection I	5
PE3014	Food and Bioprocess Engineering	5
PE3015	Process Safety	5
PE3016	Process Design and Feasibility Analysis	5
Elective Modules [1]		
Students take modules to the value of **5** credits from the following:		5
NE3002	Energy in Buildings	
PE3009	Pharmaceutical Engineering	
Year 4 - ME Pathway Process and Chemical 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		
PE4007	Mechanical Design of Process Equipment	5
PE4016	Pharmaceutical Process Validation	5
PE4050	Design Project	15
NE3003	Sustainable Energy	5
or PE4010	BioPharmaceutical Engineering	
Part B		
Core Modules		
PE6060	ME Work Placement	30
Year 5 - ME (Process and Chemical Engineering)		
Students take **60** credits as follows – all listed core modules (**45** credits) and **15** credits of elective modules:		
Core Modules		
NE6015	Data Analytics for Engineering	5
PE6030	Industrial Process Safety; Applications and Control Systems	5
PE6033	Sustainability and Environmental Protection II	5
PE6034	Complex Reaction Systems	5
PE6035	Complex Separation Processes	5
PE6050	ME Research Project	20
NE6004	Sustainability, Bioenergy and Circular Economy Systems	5
PE6032	Pharmaceutical Industry Advances and Developments	5
Elective Modules [1]		
Students take modules to the value of **5** credits as follows:		5
MG4052	Management in Practice (5)	
or PE4002	Optimisation and Continuous Process Improvement (5)	
Total Credits		**300**

[1] Some modules may be pre-requisites for elective modules in subsequent years. While there is no upper limit on the number of students who may take a particular elective module, modules may be withdrawn if there are insufficient entrants.

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 (Process and Chemical) (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.