

# MENGSC MECHANICAL ENGINEERING (MANUFACTURING, PROCESS AND AUTOMATION SYSTEMS)

## Overview

NFQ Level 9, Major Award

The MEngSc Mechanical Engineering (Manufacturing, Process and Automation Systems) is a full-time programme running for 12 months from the date of first registration for the programme.

In Part I, students must take **20** credits of core modules and select **40** credits of elective modules. Part II consists of (ME6020) to the value of **30** credits, which is completed over the summer months.

Modules in Part I are offered subject to availability. Alternative modules may be offered. The choice of modules is subject to the approval of the Programme Coordinator.

## Postgraduate Diploma in Mechanical Engineering (Manufacturing, Process and Automation Systems)

A candidate, who passes Part I but does not achieve an average mark of at least 50% across the taught modules excluding the Preliminary Research Project (ME6019) or does not achieve a mark of at least 50% in the Preliminary Research Project (ME6019), or does not achieve a mark of at least 50% in the Dissertation in Mechanical Engineering (ME6020) will be awarded a Postgraduate Diploma in Mechanical Engineering (Manufacturing, Process and Automation Systems) (<https://ucc-ie-public.courseleaf.com/programmes/pdmeng/>). A candidate, who passes the Part I examination and does not wish to proceed to Part II, may opt to be conferred with a Postgraduate Diploma in Mechanical Engineering (Manufacturing, Process and Automation Systems (<https://ucc-ie-public.courseleaf.com/programmes/pdmeng/>).

## Programme Requirements

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

## Programme Requirements

Students take **90** credits as follows – all listed core modules in Part I (**20** credits), elective modules in Part I to the value of **40** credits, and **30** credits of Research in Part II:

Code	Title	Credits
<b>Part I</b>		
Students take <b>60</b> credits in Part I as follows – all listed core modules ( <b>20</b> credits) and elective modules to the value of <b>40</b> credits:		
<i>Core Modules</i>		
ME6019	Preliminary Research Project	10
MG6021	Operations Management	5
MG6315	Project Management	5

*Elective Modules*

Students take modules to the value of **40** credits from the following, with at least **25** credits from Group A, the balance of credits from Group B, and with no more than **30** credits of elective modules selected in any single Semester:

Select at least **25** credits from the following:

ME6002	CAD/CAM (5)
ME6006	Non-Destructive Testing (5)
ME6007	Mechanical Systems (5)
ME6008	Robotics (5) <sup>1</sup>
ME6012	Advanced Robotics (5) <sup>1</sup>
CE6024	Finite Element Analysis (5)
CS6506	Programming in Python (5) <sup>2</sup>
CS6507	Programming in Python with Data Science Applications (5) <sup>2</sup>
NE6015	Data Analytics for Engineering (5)
EE4012	Biomedical Systems (5)
EE6061	Industrial Automation and Control (5)

*Group B*

Select remaining credits from the following:

PE6009	Pharmaceutical Engineering (5)
PE6002	Optimisation and Continuous Process Improvement (5)
PE6007	Mechanical Design of Process Equipment (5)
CE3010	Energy in Buildings (5)
CE4016	Energy Systems in Buildings (5)
EE6046	Introduction to Micro Electromechanical Systems (MEMS) (5)

## Research

Students take **30** credits of Research in Part II:

## Part II

ME6020	Dissertation in Mechanical Engineering	30
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**Total Credits**

**90**

<sup>1</sup> Students wishing to take ME6012 must also take ME6008.

<sup>2</sup> Students wishing to take CS6507 must also take CS6506.

## 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 in Mechanical Engineering (Manufacturing, Process and Automation Systems) (NFQ Level 9, Major Award)**

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

- Demonstrate a thorough understanding of the principles and theoretical bases of modern manufacturing techniques, automation, and production processes;
- Identify appropriate manufacturing systems for different production requirements, and describe their performance using appropriate analytical and modelling methods;

- Apply appropriate technology, quality tools and manufacturing methodology to design, re-design and continuously improve the manufacturing operations of engineering companies;
- Plan, research, execute and oversee experiments and research projects, critically analyse and interpret data, and effectively disseminate the results;
- Work effectively as a member of a multidisciplinary team, be self-motivated and able to work independently, and demonstrate leadership;
- Communicate effectively, via appropriate presentation techniques and technical publications, to other engineers, professionals, and society at large;
- Understand the role of the mechanical engineer in society and his/her responsibility for ethical, environmental and safety issues;
- Produce a dissertation in mechanical engineering and disseminate the results of their research via appropriate presentation techniques.