



DUBLIN CITY UNIVERSITY
FACULTY OF ENGINEERING AND COMPUTING
SCHOOL OF MECHANICAL AND MANUFACTURING
ENGINEERING

**Masters (MEng) in Mechanical and
Manufacturing Engineering**

Information Booklet for Prospective Students



Masters in Engineering (MEng) in Mechanical and Manufacturing Engineering

Programme Overview

This Masters programme allows the students to specialise in the widely established area of Mechanical and Manufacturing Engineering or to widen their knowledge from their undergraduate studies. It enables graduates to apply MEng Level 9 learning outcomes using computer-based technology to solve mechanical and manufacturing engineering problems. This programme introduces the use of advanced Computer Aided Engineering tools and, by experiencing these advanced techniques and software, the graduate will gain a vital edge. It allows the candidate to keep up with the rapidly changing manufacturing and design sectors. In addition, students can opt for a specialist Major in Sustainable Systems/Energy, or Biomedical Engineering.

Depending on the student's entry qualification, a number of entry routes to the MEng programme are possible: Direct entry, through an Access Course, through Qualifier Programmes, through the International Foundation Programme.

EI Accreditation

The MEng in Mechanical and Manufacturing Engineering programme is accredited by Engineers Ireland at level 9.

Programme Listing

MEng in Mechanical and Manufacturing Engineering (DC814/DC816)

The *MEng* programme is a one-year (full-time) level 9 Master programme. It is also offered in part-time mode (over two years).

Access Course to the MEng in Mechanical and Manufacturing Engineering (DC812)

The *Access Course* is an alternative entry route to the MEng programme for students who do not have a primary degree in Mechanical and/or Manufacturing Engineering, but have a level 8 Bachelor degree in a science/technology/other engineering based area. It is a one-year part-time course.

Qualifier Programme A for the MEng in Mechanical and Manufacturing Engineering (DC832)

The *Master Qualifier Programme A* is an alternative entry route to the MEng programme for students who have a level 7 degree in Mechanical and/or Manufacturing Engineering and several years of relevant work experience. It is a one-year part-time course.

Qualifier Programme B for the MEng in Mechanical and Manufacturing Engineering (DC838)

The *Master Qualifier Programme B* is an alternative entry route to the MEng programme for students who have a level 8 H3 degree in Mechanical and/or Manufacturing Engineering. It is a one-year part-time course.

International Foundation Programme (DC827,DC671)

The *International Foundation Programme* is an alternative entry route to the MEng programme for students who are non-native English speakers and do not meet DCU's English language requirements. It is a one-year full-time course.

Note: The International Foundation Programme for all Master programmes is managed by the School of Applied Language & Intercultural Studies (SALIS). More information can be found at: http://www.dcu.ie/prospective/deginfo.php?classname=IFP&originating_school=61

Entry Requirements

Direct Entry to the M.Eng in Mechanical and Manufacturing Engineering

- H2.2 level 8 (NFQ level 8 qualification) Honours degree in Mechanical and/or Manufacturing Engineering

Access Course

- A level 8 (NFQ level 8 qualification) Honours degree in a Science/Technology based degree (Applied Physics, Mathematics, Computer Science, etc.), **OR**
- A level 8 (NFQ level 8 qualification) Honours degree in other areas of engineering (Electrical/Electronic Engineering, Mechatronic Engineering, Civil Engineering, etc.)

Qualifier Programme A

- An ordinary degree (NFQ level 7 qualification) in Mechanical and/or Manufacturing Engineering, **PLUS**
- Minimum three years relevant experience (depending on the grade of the award).
- Note: candidates may be required to undertake an interview if deemed necessary by the Chair of Programme or Head of School.

Qualifier Programme B

- H3 level 8 (NFQ level 8 qualification) Honours degree in Mechanical and/or Manufacturing Engineering

Note:

NFQ – National Framework of Qualifications (see www.nfq.ie).

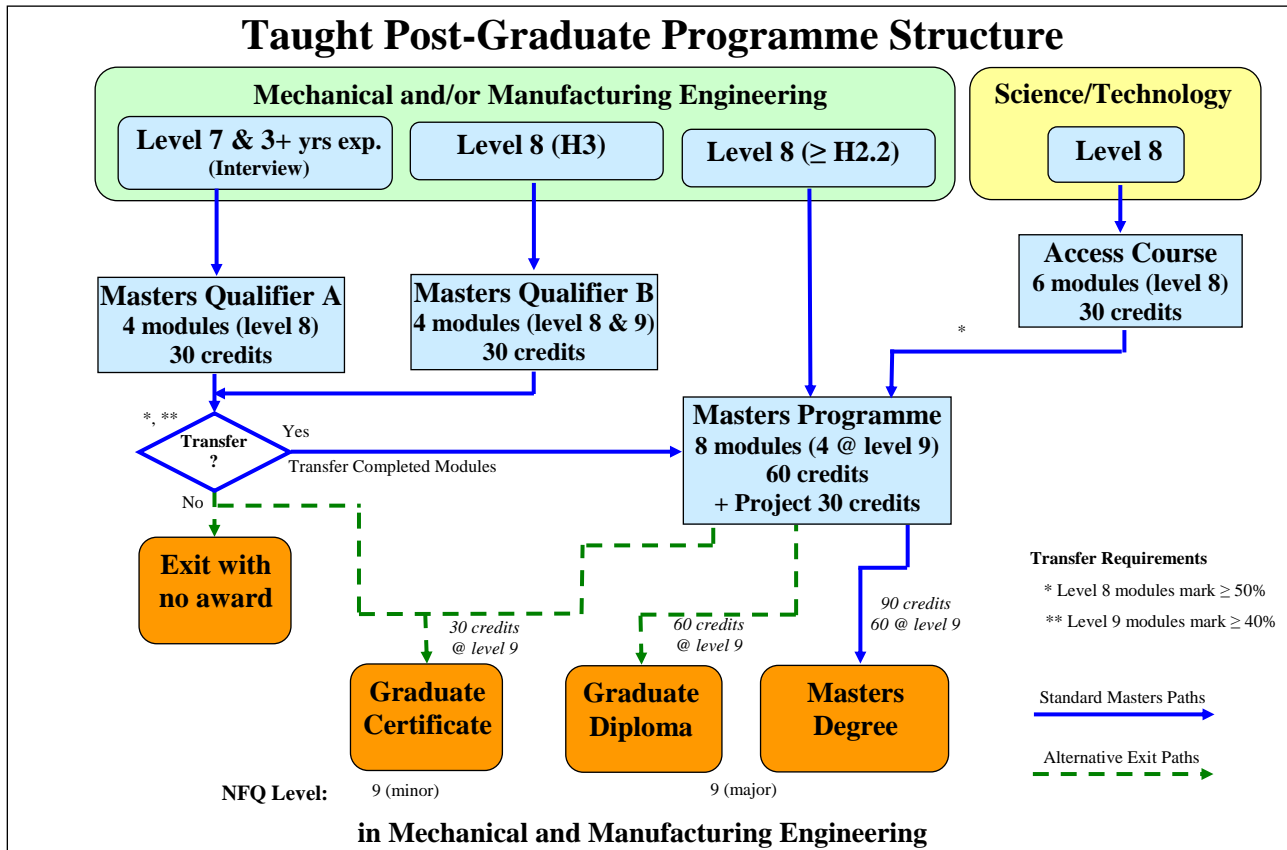
International Applications:

International candidates are expected to have educational qualifications of a standard equivalent to those outlined above. In addition, where such candidates are non-native speakers of the English language they must satisfy DCU's English language requirements. For further information on international applications see:

<http://www.dcu.ie/international/index.shtml>

Programme Structure, Pathways

The graph below shows the various entry and exit routes and possible pathways of the MEng programme.



Alternative Exit Awards

Regardless of the entry route, the normal exit qualification from the programme is an MEng in Mechanical and Manufacturing Engineering. However, there exist two alternative exit awards:

Graduate Diploma in Mechanical and Manufacturing Engineering

The Graduate Diploma (GD) is an alternative exit from the MEng programme for students who are not eligible for the MEng award (not enough credits and/or not enough level 9 credits). If a student has accumulated 60 credits from level 9 modules (excluding the Project), he/she may be awarded a Graduate Diploma in Mechanical and Manufacturing Engineering. The necessary 60 credits can be accumulated by passing eight level 9 modules (8 x 7.5 credits)

Note: for the GD the number of credits from level 8 modules is irrelevant; only credits from level 9 modules are counted.

The GD is at level 9 (major award) according to the NFQ.

Note: students can not apply for GD directly through PAC, nor can they register for it. It is an alternative exit from the MEng programme.

Graduate Certificate in Mechanical and Manufacturing Engineering

The Graduate Certificate (GC) is an alternative exit from the MEng or Masters Qualifier B programmes for students who are not eligible for the MEng or GD awards (not enough credits and/or not enough level 9 credits). If a student has accumulated 30 credits from level 9 modules (excluding the Project), he/she may be awarded a Graduate Certificate in Mechanical and Manufacturing Engineering. The necessary 30 credits can be accumulated by passing four level 9 modules (4 x 7.5 credits)

Note: for the GC the number of credits from level 8 modules is irrelevant; only credits from level 9 modules are counted.

The GC is at level 9 (minor award) according to the NFQ.

Note: students can not apply for GC directly through PAC, nor can they register for it. It is an alternative exit from the MEng programme.

Modes of Study, Programme Duration

Full-time/Part-time mode

The programmes/courses can be studied in Full-time or Part-time mode (depending on the course). In full-time mode, the student registers for modules with a total of 30 credits per semester. In part-time mode, the student registers for modules with a total of 15 credits per semester.

Below is the duration and distribution of modules per semester/year:

MEng in Mechanical and Manufacturing Engineering (DC814/DC816)

The MEng programme is available in full-time or part-time mode.

MEng		Year 1			Year 2		
		Semester 1	Semester 2	Summer	Semester 1	Semester 2	Summer
Full-time	Taught modules	30 credits (4 modules at level 9)	30 credits (4 modules at level 9)				
	Project	30 credits, level 9 (year-long)					
Part-time	Taught modules	15 credits (2 modules at level 9)	15 credits (2 modules at level 9)		15 credits (2 modules at level 9)	15 credits (2 modules at level 9)	
	Project				30 credits, level 9 (year-long)		

Access Course to the MEng in Mechanical and Manufacturing Engineering (DC812)

Access Course		Year 1		
		Semester 1	Semester 2	Summer
Part-time	Taught modules	15 credits (3 modules at level 8)	15 credits (3 modules at level 8)	

Note: Module credits from the Access Course are not carried over to the MEng programme.

Qualifier Programme A for the MEng in Mechanical and Manufacturing Engineering (DC832)

Masters Qualifier A		Year 1			Year 2		
		Semester 1	Semester 2	Summer	Semester 1	Semester 2	Summer
Masters Qualifier A (Part-time)	Taught modules	15 credits (2 modules at level 8)	15 credits (2 modules at level 8)				
MEng (Part-time)	Taught modules				15 credits (2 modules at level 9)	15 credits (2 modules at level 9)	
	Project				30 credits, level 9 (year-long)		

Note: Module credits from the qualifier programme are carried over to the MEng programme.

Qualifier Programme B for the MEng in Mechanical and Manufacturing Engineering (DC838)

Masters Qualifier B		Year 1			Year 2		
		Semester 1	Semester 2	Summer	Semester 1	Semester 2	Summer
Masters Qualifier B	Taught modules	15 credits (2 modules at level 8/9)	15 credits (2 modules at level 8/9)				
MEng	Taught modules				15 credits (2 modules at level 8/9)	15 credits (2 modules at level 8/9)	
	Project				30 credits, level 9 (year-long)		

Note: Module credits from the qualifier programme are carried over to the MEng programme.

Note: the maximum number of academic sessions during which the student is registered for a programme (including repeated and deferred years) is four. This means that the programme/course has to be completed within four academic sessions.

On-campus/Off-campus mode

In order to provide greater flexibility for students, each of the programmes/courses can be studied in either on-campus or off-campus mode.

On-campus mode:

On-campus mode is the preferred mode of study for full-time students. It means that the student attends all classes (lectures, tutorials, labs).

Off-campus mode:

Off-campus mode is usually preferred by part-time students who have a part-time job, or due to other restrictions (remote location, etc.) are unable to attend classes regularly. In off-campus mode students would mainly study independently (from module notes and textbooks provided by the module lecturer) without attending lectures. However, they would be required to attend some labs (depending on the module).

Note: off-campus students sit their exams at Dublin City University together with the on-campus students.

Programme Start Dates

The MEng programme and all its linked courses start at the beginning of the academic year in Semester 1 (usually at the end of September). Only one entry/start in each academic year is offered.

Applications / Deadlines

Applications

All applications (for both EU and non-EU students) should be made online through the Postgraduate Application Centre (PAC) (www.pac.ie). On the PAC web site, find the entries of Dublin City University (DCU), and then the programme you are interested in.

Note: DCU graduates who are eligible for direct entry to the MEng programme do not need to apply through PAC; they can apply directly from DCU.

Deadlines

The usual deadline for applying for the MEng programme and associated courses in each academic year is:

EU students: 31 August

Non-EU students: 15 July

Actual deadlines can be found on the Postgraduate Application Centre (PAC) web pages (www.pac.ie).

Applicants who require a study visa for the purposes of gaining entry into Ireland are advised to apply as early as possible.

Fees

Up-to-date information on fees for EU and non-EU students is available on the university's Finance Office web pages:

<http://www.dcu.ie/finance/fees/schedule.shtml>

Detailed Programme Information

MEng in Mechanical and Manufacturing Engineering (DC814/DC816)

General Information

The MEng programme is a one-year (full-time) level 9 Master programme. It is also offered in part-time mode (over two years).

For the MEng award, modules with a total of 90 credits should be accumulated, out of which at least 60 credits should be from level 9 modules, and the remaining 30 credits can be from level 8 modules. The project is worth 30 credits (at level 9), so for the MEng qualification eight 7.5 credit modules have to be selected.

Level 9 modules (with module code MM5**) are specifically developed for the masters programme. It is recommended that MEng students only select level 9 modules. However, in some cases (for example when a level 9 module has a pre-requisite module and a student had not studied that module or an equivalent one, which can happen with external applicants), the pre-requisite level 8 module can be selected instead of a level 9 module. Level 8 modules (with module code MM4**) are from year 4 of existing undergraduate programmes offered by the School.

Modules

Semester 1:

Module Code	CORE module (MUST take it)	Level	Credit
MM533	Research Practice and Methodology	9	7.5

Module Code	Optional modules (select THREE modules)	Level	Credit
MM421*	Finite Element Analysis (pre-requisite for MM524)	8	7.5
MM432*	Heat Transfer and Fluid Mechanics (pre-requisite for MM532)	8	7.5
MM523	Product Design, Development and Value Analysis	9	7.5
MM530	Surface Engineering and Tribology	9	7.5
MM584	Manufacturing Systems Simulation	9	7.5

Semester 2:

Module Code	Optional modules (select FOUR modules)	Level	Credit
MM524	Advanced FEA (pre-requisite: MM421 Finite Element Analysis or similar)	9	7.5
MM532	Computational Thermo-Fluid Dynamics (pre-requisite: MM432 Heat Transfer and Fluid Mechanics or similar)	9	7.5
MM555	Manufacturing Process Analysis & Tool Design	9	7.5
EE507	Entrepreneurship for Engineers	9	7.5

* Select MM421 and MM432 if you had not studied them or similar modules, as they are pre-requisites for modules in semester 2.

Year-long module:

Module Code	CORE module (MUST take it); Code depends on major!	Level	Credit
MM542	Project in Mechanical and Manufacturing Engineering (no Major)	9	30
MM544	Project in Sustainable Systems/Energy (Major in Sustainable Systems/Energy)	9	30
MM546	Project in Biomedical Engineering (Major in Biomedical Engineering)	9	30

Majors

The MEng in Mechanical and Manufacturing Engineering programme offers two majors:

- Major in Biomedical Engineering
- Major in Sustainable Systems/Energy

The type of project the student selects determines the area of the Major. If the project is in a different area (project code MM542), a Major is not awarded.

Note: the PAC code does not depend on the Major the student may select. The student selects a Major (optional) when they register for the appropriate project.

Major in Sustainable Systems/Energy

There is a growing international market for Engineers in sustainable energy and development, eco-innovation, resource efficiency and clean-tech sectors. There are lots of career opportunities in the growing fields of Energy/Renewable Energy (wind, wave, solar, biomass etc.); a national priority area for Ireland.

Major in Biomedical Engineering

This discipline integrates the necessary aspects of biology and medicine with the technical engineering aspects required to engineer medical devices. The world of medicine is evolving and expanding rapidly, with new treatments and new diseases appearing all the time. As Ireland is a major player in Bioengineering, this Major provides graduates with specialisms required by industry.

Masters Project

Each student on the MEng programme must complete a Masters Project (worth 30 credits at level 9). The project is a year-long module and spans over the Summer as well.

Depending on the type of Masters award the student wants to achieve, a project in that area has to be developed.

The project always starts in September and finishes in August the following year (within the same academic year).

The student needs to make sure that they are registered for the correct project module. Once registered, they need to contact the project coordinator and select a suitable project in the correct area.

Access Course to the MEng in Mechanical and Manufacturing Engineering (DC812)

General Information

The Access Course provides an alternative entry route to the MEng programme for students who do not have a primary degree in Mechanical and/or Manufacturing Engineering but have a Science/Technology based degree or a degree in other areas of engineering (Electronic Engineering, Civil Engineering, etc.). It aims at equalising the student's knowledge to level 8 Mechanical/Manufacturing Engineering by providing core Level 8 modules from existing undergraduate programmes. The Access Course itself does not carry an award.

The Access Course is a part-time, one year programme. It includes six five credit level 8 core (compulsory) modules with a total credit of 30. The student must pass each module with a minimum mark of 50%. The credits from the Access Course are not carried over to the MEng programme. After successful completion of the Access Course the student is eligible to register for the MEng in Mechanical and Manufacturing Engineering programme. Once they complete the Access Course and are eligible to transfer to MEng they will be transferred internally; no need to apply through PAC again. They can register for MEng in September of the next academic year.

Modules

Module Code	Module Title (MUST take ALL modules)	Level	Credit	Semester
EM201	Engineering Mathematics III	8	5	1
MM252	Manufacturing Processes 1	8	5	1
MM306	Mechanics of Machines 2	8	5	1
EM202	Engineering Mathematics IV	8	5	2
MM212	Strength of Materials II	8	5	2
MM227	Thermofluid Mechanics	8	5	2

Qualifier Programme A for the MEng in Mechanical and Manufacturing Engineering (DC832)

General Information

The Master Qualifier Programme A is an alternative entry route to the MEng programme for students who do not meet the normal MEng entry requirements but have a level 7 degree in Mechanical and/or Manufacturing Engineering and several years of relevant work experience. Its aim is to give students the knowledge, experience and skills required to study level 8 modules and to enter the Masters programme in Mechanical & Manufacturing Engineering. It is a one-year part-time course. Successful completion of the Qualifier A programme allows the student to progress to the MEng programme. The Qualifier programme itself does not carry an award, but the credits from it are transferred to the MEng programme.

The Qualifier Programme A is a part-time, one year programme. It includes four 7.5 credit level 8 modules with a total credit of 30. The student must pass each module with a minimum mark of 50%. After successful completion of the Qualifier Programme the student is eligible to register for the MEng in Mechanical and Manufacturing Engineering programme. Once they complete the Qualifier Programme and are eligible to transfer to MEng they will be transferred internally; no need to apply through PAC again. They can register for MEng in September of the next academic year.

All modules are from year 4 of existing undergraduate programmes offered by the School. Since all Qualifier A modules are at level 8, after transferring to MEng all further modules have to be at level 9 in order to accumulate 60 credits at level 9.

Modules

Semester 1:

Module Code	Module Title (MUST take BOTH Modules)	Level	Credit
MM421	Finite Element Analysis	8	7.5
MM432	Heat Transfer and Fluid Mechanics	8	7.5

Semester 2:

Module Code	Module Title (Select TWO Modules)	Level	Credit
MM401	Mechanical Engineering System Simulation	8	7.5
MM451	Design for Manufacture and Assembly	8	7.5
MM485	Operations Research Methods	8	7.5

Qualifier Programme B for the MEng in Mechanical and Manufacturing Engineering (DC838)

General Information

The Master Qualifier Programme B is an alternative entry route to the MEng programme for students who do not meet the normal MEng entry requirements but have a level 8 H3 degree in Mechanical and/or Manufacturing Engineering and several years of relevant work experience. Its aim is to give students the knowledge, experience and skills required to study level 8 and 9 modules at sufficient level and to enter the Masters programme in Mechanical & Manufacturing Engineering. It is also useful for students who had not studied some of the pre-requisite modules of the modules in the MEng programme. It is a one-year part-time course. Successful completion of

the Qualifier B programme allows the student to progress to the MEng programme. The Qualifier programme itself does not carry an award, but the credits from it are transferred to the MEng programme.

The Qualifier Programme B is a part-time, one year programme. It includes four 7.5 credit modules at level 8 or 9 with a total credit of 30. The student must pass each level 8 module with a minimum mark of 50%, and each level 9 module with a minimum mark of 40%. After successful completion of the Qualifier Programme the student is eligible to register for the MEng in Mechanical and Manufacturing Engineering programme. Once they complete the Qualifier Programme and are eligible to transfer to MEng they will be transferred internally; no need to apply through PAC again. They can register for MEng in September of the next academic year.

The module listing is the same as for the MEng programme, but only four modules are selected (two per semester). Students selecting level 8 modules need to be aware that after transferring to MEng at least 60 credits have to be accumulated from level 9 modules (including the project).

Modules

Semester 1:

Module Code	Optional modules (Select TWO modules)	Level	Credit
MM533	Research Practice and Methodology	9	7.5
MM421*	Finite Element Analysis (pre-requisite for MM524)	8	7.5
MM432*	Heat Transfer and Fluid Mechanics (pre-requisite for MM532)	8	7.5
MM523	Product Design, Development and Value Analysis	9	7.5
MM530	Surface Engineering and Tribology	9	7.5
MM584	Manufacturing Systems Simulation	9	7.5

* Select MM421 and MM432 if you had not studied them or similar modules, as they are pre-requisites for modules in semester 2.

Semester 2:

Module Code	Optional modules (Select TWO modules)	Level	Credit
MM524	Advanced FEA (pre-requisite: MM421 Finite Element Analysis or similar)	9	7.5
MM532	Computational Thermo-Fluid Dynamics (pre-requisite: MM432 Heat Transfer and Fluid Mechanics or similar)	9	7.5
MM555	Manufacturing Process Analysis & Tool Design	9	7.5
EE507	Entrepreneurship for Engineers	9	7.5

Detailed Module Information

The module descriptors with detailed information for each module (indicative content, assessment, etc.) can be found at:

http://www.dcu.ie/registry/module_school.shtml

From the menu select (with the slider bar) School Mechanical Engineering; this brings up all modules taught by the school.

Programme Codes

DCU Code	PAC Code	Programme/Course
MMME	DC814 (FT) DC816 (PT)	MEng in Mechanical and Manufacturing Engineering
MMAC	DC812 (PT)	Access Course to MEng
MMQA	DC832 (PT)	Qualifier A for MEng (for Level 7 graduates in Mech./Manuf. Eng)
MMQB	DC838 (PT)	Qualifier B for MEng (for Level 8 H3 graduates in Mech./Manuf. Eng)
IFPCME	DC827 (YL)	International Foundation Programme (Year-long, and Single-semester)
IFPSCM	DC671 (SS)	

Contact Information

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