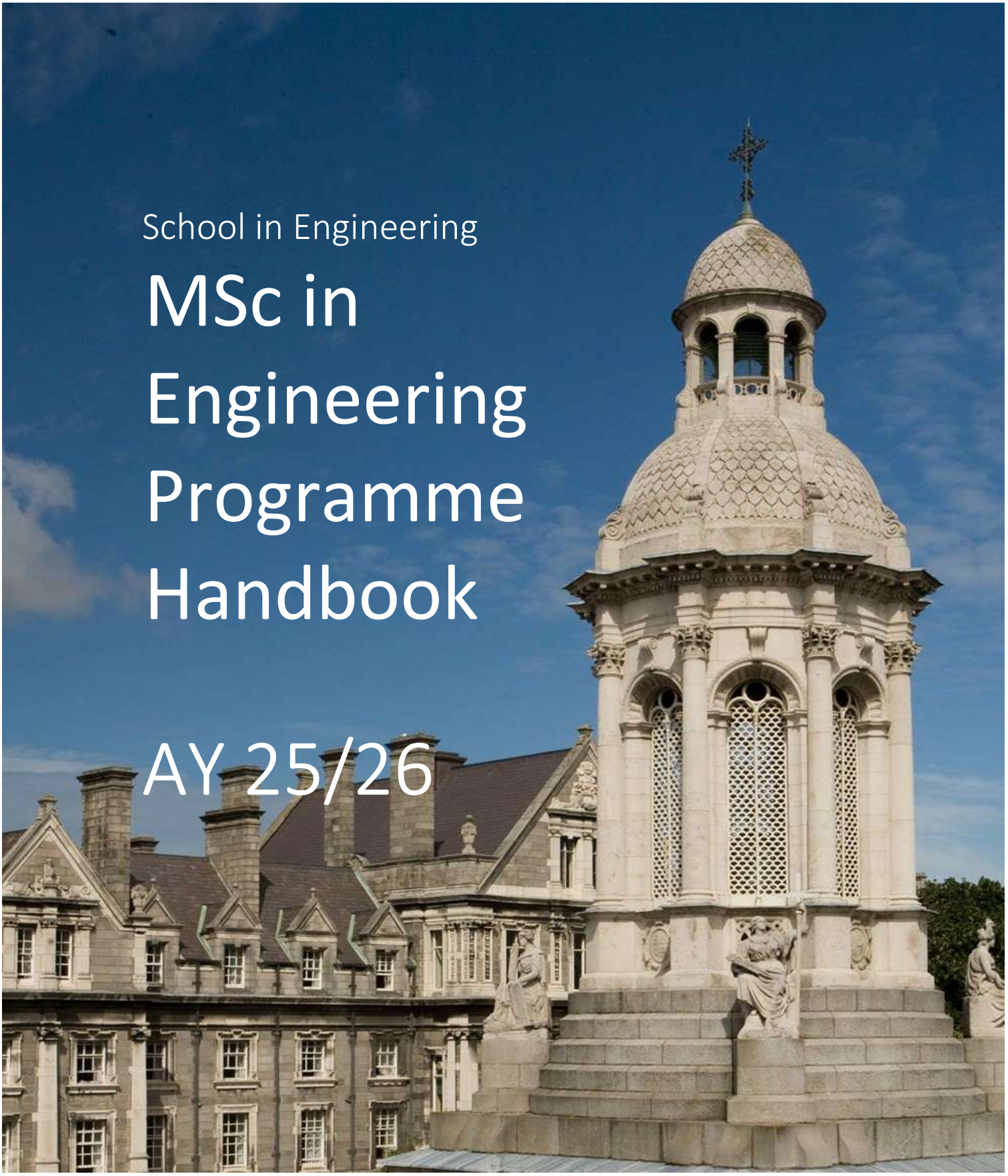
Trinity College Dublin
Coláiste na Tríonóide, Baile Átha Cliath
The University of Dublin



School in Engineering

MSc in Engineering Programme Handbook

AY 25/26

Contents

1. General Course Information

1.1 Introduction

Welcome to the MSc in Engineering (Environmental / Structural and Geotechnical / Sustainable Energy / Transport Engineering, Policy and Planning) at the Department of Civil, Structural and Environmental Engineering, Trinity College Dublin.

This course aims to develop Engineers with specialist understanding in one of the following streams: Environmental Engineering; Structural and Geotechnical Engineering; Transport Engineering; or Sustainable Energy Engineering. In addition, the course offers student the opportunity to obtain knowledge in complimentary subject areas within Civil Engineering.

This course handbook provides details on the structure and methods of assessment of the programme modules, and other relevant information about the course.

1.2 Contact Details

School of Engineering

School of Engineering, Room 1.01, 1st Floor, Museum Building.

Staff Name	**Role/Title**	**Email address**	**Contact number**
Prof. Michael Monaghan	***Interim Acting Head of School*** (12th September until 12th January 2026)	monaghmi@tcd.ie	01 896 8582
Prof. Anil Kokaram	**Head of School (*commencing 12th January 2026*)**	Anil.Kokaram@tcd.ie	01 896 2900
Asst. Prof. Breiffni Fitzgerald	**Director of Postgraduate, Teaching and Learning**	Breiffni.fitzgerald@tcd.ie	01 896 1146
Ms. Patricia Hughes	**School Manager**	pahughes@tcd.ie	01 896 1796

Department of Civil, Structural and Environmental Engineering

Discipline of Civil, Structural and Environmental Engineering, Room 1.01, 1st Floor, Museum Building. **Office hours:** Monday – Friday, 09:00 hrs until 13:00 hrs, 14:00 hrs until 17:00 hrs. **Closed for lunch:** *13:00 hrs until 14:00 hrs.*

Staff Name	**Role/Title**	**Email address**	**Contact number**
Asst. Prof. David O'Connell	**Programme Director, MSc in Engineering**	David.OConnell@tcd.ie	01 896 3892
Ms. Mary Curley	**MSc in Engineering, Administrator**	curleyma@tcd.ie	01 896 2217 (086) 0661924
Mr. Liam McCarthy	Executive Officer	lmccart4@tcd.ie	01 896 1457

Department of Civil, Structural and Environmental Engineering – Academic Staff

Staff Name	Role/Title	Email address	Contact number
Asst. Prof. Muhammad Ali		Muhammad.ali@tcd.ie	01 896 1743
Prof. Brian Broderick		bbrodrck@tcd.ie	01 896 2348
Prof. Biswajit Basu	CE7J06, module co-ordinator	basub@tcd.ie	01 896 2389
Asst. Prof. Aimee Byrne		AIMEE.BYRNE@tcd.ie	
Prof. Brian Caulfield	CE7T02, module Co-ordinator	Brian.caulfield@tcd.ie	01 896 2534
Asst. Prof. Breiffni Fitzgerald	CE7J01, CE7C05, CE7S09, module co-ordinator	fitzgeb@tcd.ie	01 896 1638
Asst. Prof. John Gallagher	CEP55E03, CE7M01, CE7M04, module co-ordinator	j.gallagher@tcd.ie	01 896 1638
Asst. Prof. Mohammad Reza Ghaani	CE7M05, module co-ordinator	mohammad.ghaani@tcd.ie	01 896 5019
Assoc. Prof. Bidisha Ghosh	CE7T01, CE7T04, Module co-ordinator	bghosh@tcd.ie	01 896 3646
Prof. Laurence Gill	CE7E07, CE7E05, module co-ordinator	laurence.gill@tcd.ie	01 896 1047
Asst. Prof. John Hickey	CE7S03, module Co-ordinator	John.hickey@tcd.ie	01 896 XXXX
Asst. Prof. David Igoe	CE7S06, module Co-ordinator	igoed@tcd.ie	01 896 3805
Prof. Sarah McCormack	**Head of Department** CE7J02, CE7J04, module Co-ordinator	mccorms1@tcd.ie	01 896 3837
Asst. Prof. Patrick Morrissey	CE7C05, module Co-ordinator	Morrisp5@tcd.ie	01 896 5011
Prof. Alan O'Connor	CE7S04, module co-ordinator	Alan.oconnor@tcd.ie	01 896 1822

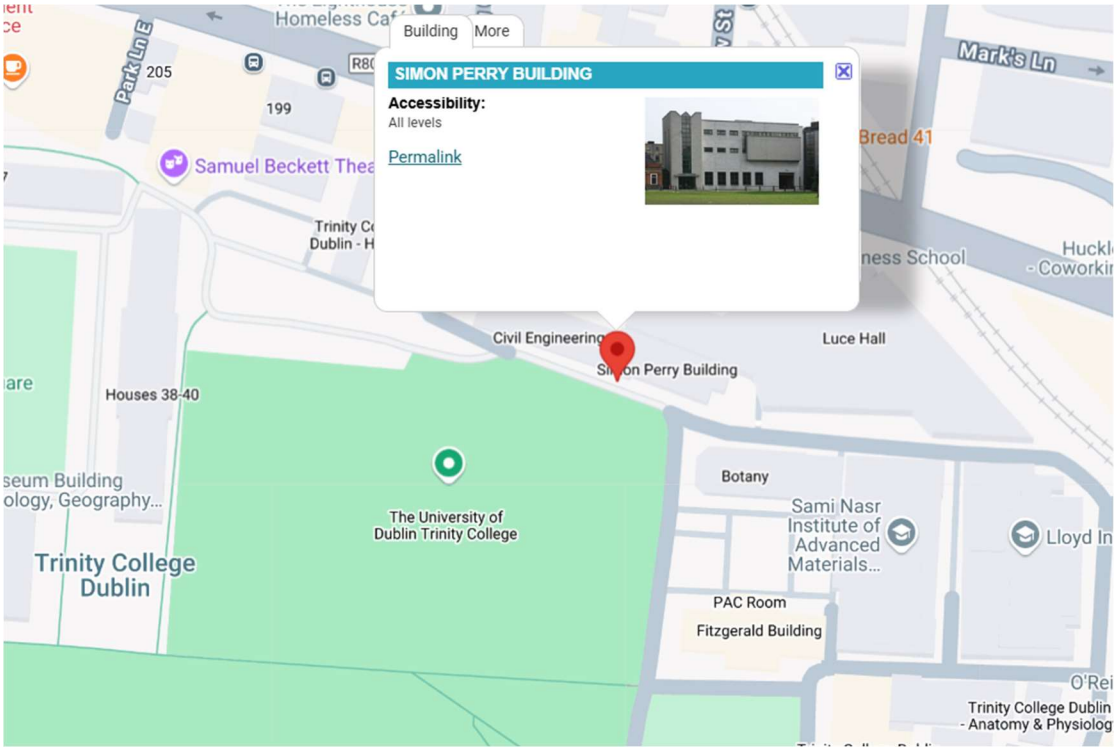
Asst. Prof. David O'Connell	CE7E06, CEP55E06, module co-ordinator	David.oconnell@tcd.ie	01 896 XXXX
Assoc. Prof. Dermot O'Dwyer	CE5A62, CE7S02, module co-ordinator	dwodwyer@tcd.ie	01 896 2532
Assoc. Prof. Brendan O'Kelly	CE7S01, module Co-ordinator	Brendan.okelly@tcd.ie	01 896 2387
Prof. Margaret O'Mahony	CE7T05, module co-ordinator	Margaret.omahony@tcd.ie	01 896 2084
Assoc. Prof. Sara Pavia	CEP55E05, module co-ordinator	pavias@tcd.ie	01 896 2516
Prof. Karen Wiltshire, CRH Professor of Climate Science		wiltskhik@tcd.ie	To be Confirmed
Assoc. Prof. Liwen Xiao	CE7E04, module co-ordinator	liwen.xiao@tcd.ie	01 896 3741
Asst. Prof. Rui Teixeira		RUI.TEIXEIRA@tcd.ie	

Department of Civil, Structural and Environmental Engineering – Technical Support Staff

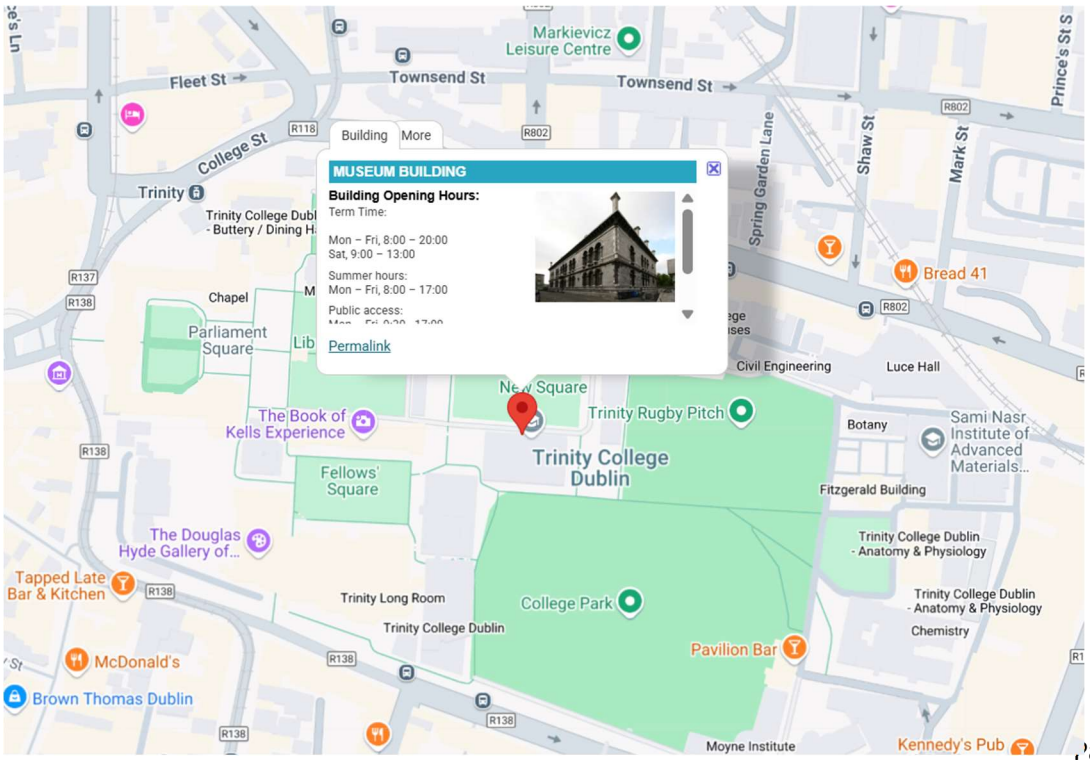
Mr. David Mc Aulay	Chief Technical Officer 1	David.mcaulay@tcd.ie	01 896 2386
Mr. Robert Fitzpatrick	Technical Officer	Robert.fitzpatrick@tcd.ie	01 896 8578
Mr. Michael Grimes	Chief Technical Officer Specialist	Michael.grimes@tcd.ie	01 896 2388
Mr. Joseph O'Connell	Technical Officer	Joseph.oconnell@tcd.ie	01 896 1009
Mr. Danny Dempsey McMahon	Senior Laboratory Attendant	XXXXXXXXXX@tcd.ie	01 896 2386
Mr. Patrick Veale	Environmental Technical Officer	vealep@tcd.ie	01 896 3013
Dr. Owen Humphreys	Senior Technical Officer	Owen.humphreys@tcd.ie	01 896 8578
Miss Gabriela Chmiel	Laboratory Attendant	chmielg@tcd.ie	01 896 2244
Ms. Kristina Petra Zubovic	Senior Technical Officer	ZUBOVIKP@tcd.ie	

1.3 Key Locations

Simon Perry Building



Museum Building



References/Sources:

[Interactive College Map]

[Blackboard]

[Academic Registry]

1.4 Key Dates

Important dates and submission deadlines:

Dissertation (CE7M03):

- Choose research topic, [Semester 1, week commencing 6th October (week 4)]
- Dissertation – Interim Presentation 2026, [Semester 2, week commencing 23rd March '26 (week 31)]
- MSc Dissertation submission deadline is **Friday, 28th August 2026**

The full academic year structure is available - Academic Year Calendars

Important Dates		
WEEK	**DATE**	**MICHAELMAS TERM 2025**
3	08-Sep-25	Orientation PG week
4	15-Sep-25	Tutorials begin from this week
7	06-Oct-25	Submission of assignment 1: 'Name of module'
9	20-Oct-25	
10	27-Oct-25	**Study/Review Week**
11	03-Nov-25	
12	10-Nov-25	
		Teaching Ends
16		**Revision / Assessment**
17/18	15/22-Dec-25	Assessment / Christmas
WEEK	**DATE**	**HILARY TERM 2026**
1	19-Jan-26	Lectures begin in all modules

2	26-Jan-26	Tutorials begin from this week
6	23-Jan-26	Teaching and Learning
7	02-Mar-26	**Reading Week**
8	09-Mar-26	Teaching and Learning
9	16-Mar-26	
11	30-Mar-26	
12	06-Apr-26	
		Teaching ends
13/14	13/20-Apr-26	Revision / Assessment
15	27-Apr-26	Assessment

Students are advised to check Blackboard Ultra for submission dates for assignments/coursework.

Reference/Source:

Academic Year Structure

1.5 Timetable

The MSc in Engineering will be available on the MyTCD site. The MSc in Engineering timetable will be issued with the handbook. The timetable will be available from the 8th September 2025. Any amendments to the MSc in Engineering will be circulated to the class by email.

Reference/Source:

My TCD

2. Scholarships and Prizes

The student who achieves the highest overall mark based on the annual MSc in Engineering examinations is awarded the **Robert Friel Prize**, valued at €200.

The student who achieves the highest overall mark based on their dissertation is awarded the **best project prize**, valued at €200.

3. Academic Writing

3.1 The Use and Referencing of Generative AI

Aligned with the College Statement on Artificial Intelligence and Generative AI in Teaching, Learning, Assessment & Research (2024), the use of GenAI is permitted unless otherwise stated. Where the output of GenAI is used to inform a student's document or work output, this usage should be acknowledged and appropriately cited, as per Library guidelines on acknowledging and reference GenAI. From an academic integrity perspective, if a student generates content from a GenAI tool and submits it as his/her/their own work, it is considered plagiarism, which is defined as academic misconduct in accordance with College Academic Integrity Policy.

References/Sources:

College Statement on Artificial Intelligence and Generative AI in Teaching, Learning, Assessment and Research

Library guidelines on acknowledging and reference GenAI.

3.2 Academic Integrity and Referencing Guide

The following is an extract from the Academic Calendar in relation to **Section 1: General Academic Regulations for Graduate Studies and Higher Degrees**

Terminology and Layout Defined

> The next group contains graduate students undertaking a taught postgraduate programme. Programmes of study for these graduate students may involve them in research activity and the production of a dissertation of a minor or major nature; however, the dissertations so produced are examined, essentially, by a Court of Examiners wherein an external examiner is appointed by the College to examine the programme as a whole. The regulations pertaining specifically to this group of graduate students are contained in Section 3 and sections 6,7 and 8.

Section 3 General Regulations for Taught Graduate Programmes

The general regulations outlined in Section 1 apply as appropriate in addition to the following regulations specific to taught programmes.

1 Programmes of instruction leading to the higher degrees of B.D., D.Ch.Dent., D.Clin.Psych., D.Couns.Psych., D.Ed., LL.M., M.A.I., M.A.O., M.B.A., M.Ch., M.D., M.Ed., M.Phil., M.Phil.(Ecum.), M.Phil.(Peace Studies), M.Sc., M.Sc.(Mgmt.), M.St., M.S.W., Postgraduate Diplomas (P.Grad.Dip. and H.Dip. (Ed.) Primary Teaching) and Postgraduate Certificates (P.Grad.Cert.) are provided in approved subjects listed in this Calendar Part III. In all cases applications are competitively assessed and candidates who meet the minimum admission requirements set out in this Calendar Part III are not automatically awarded entry.

2 Some Masters programmes have the option of an exit Postgraduate Diploma when the taught component of the programme has been satisfactorily completed. Such P.Grad.Dip. programmes are, for completeness, listed under the appropriate Faculty entry but are not open to entry as separate options from their parent Masters programme i.e., students apply for entry to the appropriate Masters programme.

3 Students who have opted to receive a P.Grad.Dip. may apply to submit subsequently for the corresponding Masters degree. Following completion of the Masters requirements the student will inform the Registrar of their intention to rescind the P.Grad.Dip. and have the credit obtained during the P.Grad.Dip. integrated into the Masters degree. The student will be required to submit the original P.Grad.Dip. and/or any duplicates that have been issued. The time limit for applying to complete the credits required for the Masters degree will normally be up to 5 years following completion of the P.Grad.Dip. In exceptional circumstances, a longer time limit may be considered by the Dean of Graduate Studies. This arrangement is not available to students who exit with the P.Grad.Dip. as a consequence of failing to attain the pass requirements of the Masters.

4 Students who have opted to receive a P.Grad.Cert. may apply to submit subsequently for the corresponding P.Grad.Dip. and/or Masters degree. Following completion of the P.Grad.Dip. or Masters requirements the student will inform the Registrar of their intention to rescind the P.Grad. Cert. and have the credit obtained during the P.Grad.Cert. integrated into the P.Grad.Dip. or Masters degree. The student will be required to submit the original P.Grad.Cert. and/or any duplicates that have been issued. The time limit for applying to complete the credits for the P.Grad.Dip. and/or Masters degree will normally be up to 5 years following completion of the P.Grad.Cert. In exceptional circumstances, a longer time limit may be considered by the Dean of Graduate Studies. This arrangement is not available who exit with a P.Grad.Cert. as a consequence of failing to attain the pass requirements of the P.Grad.Dip./Masters.

5 All Postgraduate Diplomas may be awarded at two levels (i) Postgraduate Diploma and (ii) Postgraduate Diploma with Distinction.

6 All taught Masters Degrees may be awarded with Distinction. The award of a taught Masters with Distinction shall require the achievement of a distinction for the dissertation but may include additional conditions as specified by the programme committee. A distinction cannot be awarded if a candidate has failed any credit during the period of study. Criteria for the award of a distinction for the dissertation shall be approved by the relevant Director of Teaching and Learning (Postgraduate).

A **link** to the Academic Integrity Policy and the Statement of Principles on Academic Integrity

Statement on Integrity

In Trinity College Dublin, we commit ourselves as staff and students to acting responsibly and ethically, embracing integrity in all our actions and interactions as members of the College

community. Understanding that integrity requires honesty, transparency and accountability, we agree to:

- Strive to do what we say we will, ensuring that we are aware of our commitments and responsibilities in order to fulfil them, and abiding by College and other relevant policies and the highest standards of conduct.
- Give credit where credit is due, recognizing and acknowledging the contributions and achievements of others in scholarship, teaching, research and service.
- Tell the truth, as a community and as individuals, speaking out and listening even when it is difficult, naming problems and honestly acknowledging mistakes.
- Hold ourselves and others to account for the things for which we are each responsible.
- Use resources for the purposes for which they are intended and be above reproach in financial dealings.
- Deal fairly, consistently and transparently with others.

A **link** to the Library Guidelines on Academic Integrity and a link to the declaration text for submitted assignments.

Students need to complete the Ready steady write course tutorial.

Whatever your academic background is, it is your responsibility to understand how to reference correctly – there are lots of supports available if you need more information.

References/Sources:

Calendar Part III, Section 1: General Regulations & Information, 'Academic

Integrity' College Statement on Academic Integrity

Academic Integrity Policy

Library Guides – Academic Integrity Coversheet Declaration

3.3 Research Ethics

The quest for knowledge and the betterment of society through research are central to the mission of Trinity College. It is essential that all of our research is conducted with integrity and that it adheres to the highest standards of ethical oversight. Research excellence in College is guided by the principles described in the Policy on Good Research Practice document (2002; updated in 2009) and these principles apply to all research conducted by staff and students under the auspices of Trinity College Dublin.

In order to ensure that we continue to operate at the highest levels of excellence all policies in this area are continuously reviewed by the Research Ethics Policy Committee (REPC).

All research with impact has an ethical dimension and all researcher should reflect on the implications of their work, not just in terms of human (and animal) welfare and dignity, but also the social and cultural impact of their research. Funding agencies are placing increasing importance on ethics approval procedures and the scope of research areas requiring ethical review is growing.

Further information on the policy on good research practice,
Policy on Good Research Practice

References/Sources:

Research Ethics

Policy on Good Research Practice

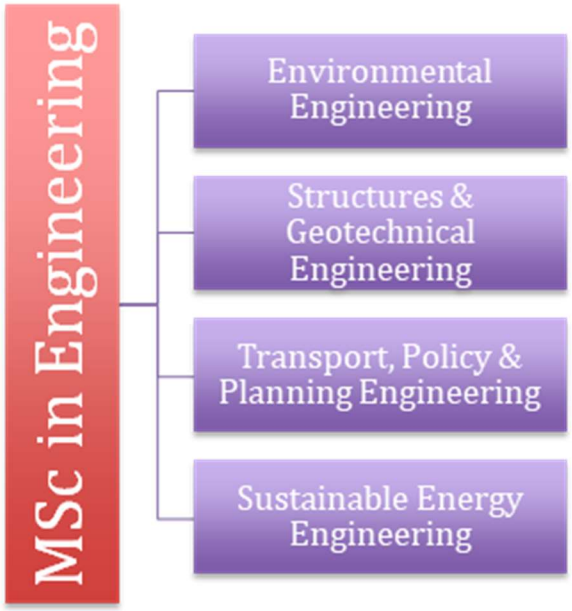
Ethics Policy

4. TEACHING AND LEARNING

4.1 Programme Structure

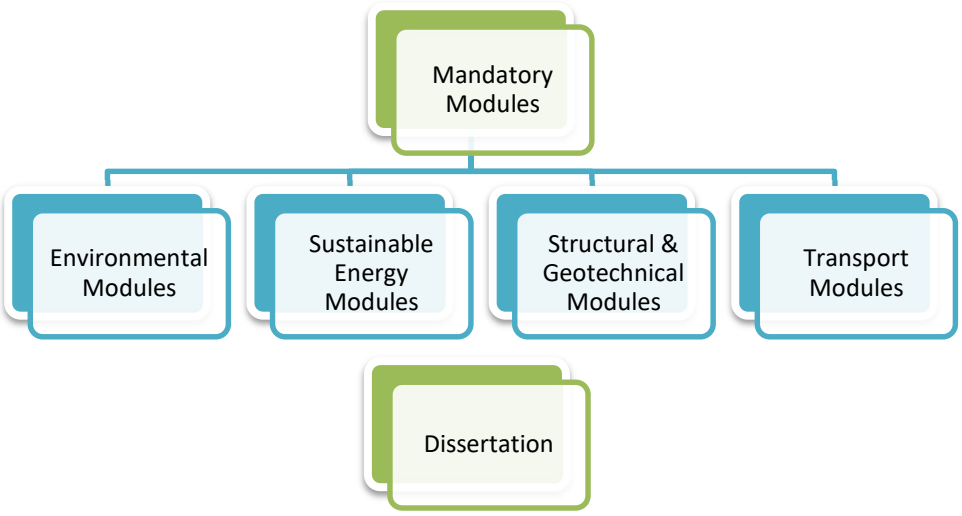
MSc in Engineering Structure

This course aims to develop engineers with specialist understanding in one of the areas: Environmental Engineering; Structural and Geotechnical Engineering; Transport and Planning Engineering; or Sustainable Energy Engineering. In addition, the course offers students the opportunity to obtain knowledge in complementary subject areas within the Civil Engineering Discipline.



Course Structure:

Candidates must take twelve modules, namely the four mandatory modules (CE7M01, CE7M03, CE7M04 and CE7M05), together with at least four of the modules in their chosen specialisation and four other modules, along with the CE7M03; which in total amount to 90 credits.



Full-time Programme:

In the first semester, candidate pursuing the course full time must take modules CE7M01, CE7M04 and CE7M05 along with four five-credit modules selected from options (including at least two from their selected specialisation), listed below.

In the second semester, candidates pursuing the course full time must take module CE7M03 along with four five-credit modules selected from options (including at least two from their selected specialisation), listed below.

Module Descriptors:

Mandatory modules

CE7M01 Civil Engineering Management (10 credits)
CE7M03 Research Dissertation (30 credits)
CE7M04 Engineering Project (5 credits)
CE7M05 Research Methods (5 credits)

Environmental Engineering

CEP55E03 Air Pollution: Monitoring, Assessment and Control (5 credits)

CE7E04 Waste Management and Energy Recovery (5 credits)
CE7E05 Water Quality and Hydrological Modelling (5 credits)
CE7E06 Water Resource Planning and Climate Change (5 credits)
CE7E07 Sustainable Water Supply and Sanitation (5 credits)
CEP55E06 Groundwater and Pollution (5 credits)

Structural and Geotechnical Engineering

CE7S01 Geotechnical Engineering (5 credits)
CE7S02 Advanced Structural Analysis (5 credits)
CE7S03 Wind and Earthquake Engineering (5 credits)
CE7S04 Bridge Engineering (5 credits)
CE7S06 Offshore Geotechnical Engineering (5 credits)
CE7S07 A Unified Theory of Structures (5 credits)
CE7S09 Advanced Theory of Structures (5 credits)
CE5A62 Structures II [Advanced Design of Structures] (5 credits)

Sustainable Energy

CE7J01 Wind Energy (5 credits)
CE7J02 Solar Energy Conversion and Applications (5 credits)
CE7J04 Energy Policy and Energy Storage (5 credits)
CE7J06 Wave Energy (5 credits)

Transport Engineering, Policy and Planning

CE7T01 Transportation Policy (5 credits)
CE7T02 Transportation Modelling and Planning (5 credits)
CE7T04 Intelligent Transportation Systems (ITS) (5 credits)
CE7T05 Transport Design (5 credits)

Common

CE7C05 Advanced Spatial Analysis using GIS (5 credits)
CEP55E05 Civil Engineering Materials (5 credits)
CEP55E06 Groundwater and Pollution Control (5 credits)
EEP55C23 Computation for Transportation Engineering (5 credits)
EEP55C24 Simulations for Geophysical Modelling (5 credits)

Some of the module options in either semester may be withdrawn from time to time and some new modules may be added, subject to demand. In the event, that insufficient module options are

available to meet the minimum module requirements of a particular specialisations then an alternative specialisation or a general Civil Engineering specialisations may be chosen.

By the end of the course, full-time candidates must have completed the mandatory modules including the research dissertation, and at least four of their specialisation module options and four of the other module options, together with the compulsory modules, amounting to a total of 90 credits.

Part-time Programme

Candidates may also take the course part-time over two years. In this case, during the first year, the candidates take **eight** modules, namely: the **mandatory modules** CE7M01, CE7M04 and CE7M05 along with **five** of the module options (including at least ***two*** from their chosen specialisation), which together amounts to 45 credits.

During the second year, candidates must complete the compulsory **CE7M03** module together with **three** other module options (including at least **two** from their chosen specialisation) which amounts to 45 credits. By the end of the course, part-time candidates must have completed the mandatory modules including the research dissertation, and at least four of their specialisation module options and four of the other module options, together with the compulsory modules, amounting to a total of 90 credits.

Post Graduate Diploma

Postgraduate Diploma candidates will be assessed on the basis of written examinations and successful completion of the Research Methodology and Engineering Project modules. M.Sc. candidates will, in addition, completed a substantial research project and submit a dissertation of approximately 30,000 words.

Degree Awards

1) The pass mark for all elements is 50%. The overall mark for the programme is the credit-weighted average of the mark awarded for each module. To pass the taught modules students must achieve an overall average mark on taught modules of at least 50% and pass taught modules amounting to 50 ECTS credits. In the event a student has failed up to 10 ECTS of taught modules it may be possible to “pass by compensation”. To “pass by compensation” a student must (i) achieve an overall credit-weighted average mark of at least 50% AND (ii) achieve a pass mark in taught modules carrying a minimum of 40 credits AND (iii) obtain a module mark of at least 40% in any remaining module(s).

2) Students who have failed the taught modules (by virtue of not achieving the overall average mark of 50% and/or not passing taught modules amounting to 50 ECTS credits) may be re-assessed within the academic year with the agreement of the course coordinator. Re-assessment is only available for failed modules amounting to 20 ECTS where at most 15 ECTS of modules were failed in any one semester and none of these modules could have been compensated according to regulations in 1) above.
3) Different modalities of assessment are permitted in the reassessment session as determined by the programme. The same compensation regulations apply to reassessed modules as outlined in 1) above.
4) To qualify for the award of the MSc degree, students must submit a dissertation and achieve a pass mark in both the CE7M03 Dissertation module and the taught modules.
5) In order to qualify for a Masters with Distinction, students must as a minimum a) pass all taught modules, b) achieve a final overall average mark for the programme of at least 70% and c) achieve a mark of at least 70% in the CE7M03 Dissertation module.
6) A Distinction cannot be awarded if a candidate has failed any credit during the programme.

The National Framework of Qualifications (QQI)

The National Framework of Qualifications is a 10 – level system used to describe qualifications in the Irish education and training system.

Level 9 is typically considered postgraduate education as entry is reserved for those with undergraduate qualifications.

Major Awards

Masters Degree – there are two types of Masters Degree in Ireland: taught Masters Degrees and research Masters Degrees. The taught Masters Degree is awarded following the completion of an accredited programme of one to two years' duration (60 -120 ECTS credits). Entry to a programme leading to a taught Masters Degree is typically for holders of Honours Bachelor Degrees. In some cases, entry to the programme is permitted for people with extensive experience in a relevant area.

The Irish Masters Degree is compatible with completion of the Bologna Second Cycle.

Assessment and Academic Progression Policy –

This Policy has been updated to be in line with other assessment related policies (e.g. extensions) and principles of inclusivity. The importance of assessment design in upholding academic integrity is stipulated and the facility to ask a student to verify/validate that they have achieved the required programme or module learning outcomes via an in-person meeting or viva is now included.

Separately, a review of the undergraduate compensation regulations was undertaken to address inconsistency in their application, and resulted in changes to the relevant sections of the Calendar to clarify that all students, who for whatever reason (deferral to the reassessment session or repeating a module off-books) do not rise with their year after the annual examination session, are required to repeat any modules in which they gained a qualified pass.

4.2 Programme Structure and Workload

In your studies you should aim to work a minimum of 50 hours per week. With a timetabled schedule of about 25 hours per week, this means you should be planning independent study of at least 25 hours per week. This includes reading course material prior to lectures – you should not expect to be given all the module material in the lectures and tutorials. The table below details the modules, credit value and co-ordinator.

Module	Module Title	ECTS	Co-ordinator
Mandatory Modules			
CE7M01	Civil Engineering Management	10 ECTS	John Gallagher
CE7M04	Engineering Project	5 ECTS	John Gallagher
CE7M05	Research Methods	5 ECTS	Mohammad Reza Ghaani
CE7M03	Dissertation	30 ECTS	Your supervisor
Semester 1 modules			
CE7C05	Advanced Spatial Analysis Using GIS	5 ECTS	Patrick Morrisey

CEP55E03	Air Pollution: Monitoring, Assessment & Control	5 ECTS	John Gallagher
CE7E04	Waste Management and Energy Recovery	5 ECTS	Liwen Xiao
CE7E07	Sustainable Water Supply and Sanitation	5 ECTS	Laurence Gill
CE7J02	Solar Energy Conversion and Applications	5 ECTS	Sarah McCormack
CE7J04	Energy Policy and Demand	5 ECTS	Sarah McCormack
CE7S02	Advanced Computation for Structures	5 ECTS	Dermot O'Dwyer
CE7S03	Wind and Earthquake Engineering	5 ECTS	John Hickey
CE7S09	Advanced Theory of Structures	5 ECTS	Breiffni Fitzgerald
CE7T01	Transportation Policy	5 ECTS	Bidisha Ghosh
CE7T02	Transport Modelling and Planning	5 ECTS	Brian Caulfield
Semester 2 Modules			
CE7E05	Water Quality and Hydrological Modelling	5 ECTS	Laurence Gill
CE7E06	Water Resource Planning and Climate Change	5 ECTS	David O'Connell
CE7J01	Wind Energy	5 ECTS	Breiffni Fitzgerald
CE7J06	Wave Energy	5 ECTS	Biswajit Basu
CE5A62	Structures II [Advanced Design of Structures]	5 ECTS	Dermot O'Dwyer

CE7S01	Geotechnical Engineering	5 ECTS	Brendan O'Kelly
CE7S04	Bridge Engineering	5 ECTS	Alan O'Connor
CE7S06	Offshore Geotechnical Engineering	5 ECTS	David Igoe
CE7S07	A Unified Theory of Structures	5 ECTS	Roger West
CE7T04	Intelligent Transportation Systems	5 ECTS	Bidisha Ghosh
CE7T05	Transport Design	5 ECTS	Margaret O'Mahony
CEP55E05	Civil Engineering Materials	5 ECTS	Sara Pavia
CEP55E06	Groundwater and Pollution Control	5 ECTS	David O'Connell
EEP55C23	Computation for Transportation Engineering	5 ECTS	Biswajit Basu
EEP55C24	Simulations for Geophysical Modelling	5 ECTS	Biswajit Basu

Reference/Source:

Policy on the Trinity Learning Management System (LMS)

4.3 Postgraduate Taught Research Models

The model(s) for PGT research components selected by the course director for the programme should be outlined in the programme handbook. More than one model may be employed per course but generally Model 1 is the accepted model for the MSc in Engineering..

Reference/Source:

5 Model Framework for Postgraduate Taught Research

4.4 Learning Outcomes

This course aims to develop engineers with specialist understanding in one of the areas: Environmental Engineering; Structural and Geotechnical Engineering; Transport and Planning Engineering; or Sustainable Energy Engineering. In addition, the course offers students the opportunity to obtain knowledge in complementary subject areas within the Civil Engineering Discipline.

Graduates should have,

i. **Advanced Technical Knowledge**

   Graduates of the TCD MSc in Engineering will demonstrate a deep and systematic understanding of engineering principles, methods, and technologies in their chosen field (e.g. transport systems, sustainable energy technologies, soil-structure interaction, or environmental systems).

ii. **Research and Analytical Skills**

   Graduates will be able to design, conduct, and critically evaluate research using advanced quantitative and qualitative methods, including modelling, simulation, and experimental approaches relevant to engineering practice.

iii. **Problem-Solving and Innovation**

   Graduates will apply advanced problem-solving skills to develop sustainable, innovative, and practical engineering solutions that address complex, real-world challenges in infrastructure, energy, or the environment.

iv. **Sustainability and Ethics**

   Graduates will evaluate the environmental, social, and economic impacts of engineering solutions and integrate sustainability, ethical responsibility, and climate resilience into

engineering design and decision-making.

v. Professional and Communication Skills

Graduates will have the capability to communicate effectively with specialist and non-specialist audiences, demonstrate leadership and teamwork in multi-disciplinary contexts, and engage in professional practice aligned with industry and societal needs.

Success on the course is strongly linked to study skills. While each individual has a different style of learning, the following points will help you do well on the course.

1. **Work steadily**
   Successful students take a serious and committed attitude to their subject from the first day of the course. Last minute rushes to meet deadlines and panic cramming invariably decreases the quality of learning.

2. **Review all teaching promptly and thoughtfully**
   Most effective learning takes place outside the lecture theatre. It is advisable to go through lecture notes as soon as possible after each lecture, even if only a few minutes are spent for each lecture. Compare what has been heard and discussed with the information in the reference and recommended texts. Consider the information and distinguish between learning single facts and understanding the subject matter. The lecturer will be happy to clarify any queries that may arise at the next lecture or personally, by appointment, at a later date.

3. **Attend regularly**
   No lecturer is likely to explain material in a lecture a second time to someone who was absent the first time. Failure to attend lectures will be reflected in the marks for the relevant assessment.

4. **Plan your time carefully**
   It maybe helpful to draw up a schedule of commitments: reviewing lectures, preparing laboratory reports, essays and exam revision. An estimate should be made of how much time will be needed for each task, working backwards form each deadline to find out when the next task should be started.

5. **Working with colleagues**
   Working with a few colleagues in a group will often help everyone to learn effectively. For example, it maybe necessary to set time aside each day to review lecture notes together. Working together may help with your personal discipline, while discussing a subject often clarifies many of the issues and concepts involved. **However, it should be pointed out that working together is not the same as copying another person's work. Copying another person's work is considered as plagiarism.** Plagiarism is considered as a major offence, and subject to the disciplinary procedures of the University. More information about plagiarism can be found in the Calendar, Part III, General Regulations & Information, section 67: https://www.tcd.ie/calendar/graduate-studies-higher-degrees/complete-part-III.pdf

A link to the Library Guidelines for Avoiding Plagiarism, https://libguides.tcd.ie/friendly.php?s=plagiarism

Declaration text for submitted assignments: https://libguides.tcd.ie/plagiarism/declaration

4.5 Module Descriptors & Compulsory Reading Lists

Module Descriptors:

Mandatory modules

CE7M01 Civil Engineering Management (10 credits)
CE7M03 Research Dissertation (30 credits)
CE7M04 Engineering Project (5 credits)
CE7M05 Research Methods (5 credits)

Environmental Engineering

CEP55E03 Air Pollution: Monitoring, Assessment and Control (5 credits)
CE7E04 Waste Management and Energy Recovery (5 credits)
CE7E05 Water Quality and Hydrological Modelling (5 credits)
CE7E06 Water Resource Planning and Climate Change (5 credits)

CE7E07 Sustainable Water Supply and Sanitation (5 credits)
CEP55E06 Groundwater and Pollution (5 credits)

Structural and Geotechnical Engineering

CE7S01 Geotechnical Engineering (5 credits)
CE7S02 Advanced Structural Analysis (5 credits)
CE7S03 Wind and Earthquake Engineering (5 credits)
CE7S04 Bridge Engineering (5 credits)
CE7S06 Offshore Geotechnical Engineering (5 credits)
CE7S07 A Unified Theory of Structures (5 credits)
CE7S09 Advanced Theory of Structures (5 credits)
CE5A62 Structures II [Advanced Design of Structures] (5 credits)

Sustainable Energy

CE7J01 Wind Energy (5 credits)
CE7J02 Solar Energy Conversion and Applications (5 credits)
CE7J04 Energy Policy and Energy Storage (5 credits)
CE7J06 Wave Energy (5 credits)

Transport Engineering, Policy and Planning

CE7T01 Transportation Policy (5 credits)
CE7T02 Transportation Modelling and Planning (5 credits)
CE7T04 Intelligent Transportation Systems (ITS) (5 credits)
CE7T05 Transport Design (5 credits)

Common

CE7C05 Advanced Spatial Analysis using GIS (5 credits)
CEP55E05 Civil Engineering Materials (5 credits)
CEP55E06 Groundwater and Pollution Control (5 credits)
EEP55C23 Computation for Transportation Engineering
EEP55C24 Simulations for Geophysical Modelling

Selection of Modules

An important decision that you will have to make early in the programme, is which optional modules you are going to take examinations in. **You must confirm which module options you are taking in both the first and second semesters by completing the form and submit it by**

Friday, 19th September 2025. You will not have access to modules on blackboard or in your student portal until you have registered your selection as instructed here.

Selection of Research Project for M.Sc. Dissertation

The MSc Dissertation is a very important part of the MSc programme. It allows the students to carry out in-depth research about a topic and to carry out laboratory/field/numerical work.

In the first semester, a list of possible projects will be compiled by the academic staff and distributed to the MSc class. The students will be requested to choose a project in their specialisation (Environmental / Structural and Geotechnical / Sustainable Energy / Transport, Policy and Planning) for their MSc Dissertation, having discussed and agreed beforehand with the relevant supervisor.

Students are also welcome to suggest their own topics for projects and they may proceed with these projects once a suitable supervisor has been found from the academic staff. **The students must confirm which research project they are taking for their MSc dissertation by Wednesday, 8th October 2025**. The students should contact their potential supervisors to discuss the research projects as soon as possible, these will be issued on a first come basis.

4.6 Coursework Requirements

Assignments and coursework should be submitted on-line on the module blackboard page within the deadline as instructed by the module or coursework co-ordinator.

Late Submission of Extensions Policy

The purpose of this policy is to clearly outline the expectations regarding the submission of assessments, the procedures for dealing with assessments that are submitted after designated deadlines and the consequences of late submissions.

The policy aims to ensure fairness and consistency in handling late submissions. Adherence to this policy allows academics to manage their workload effectively and thereby provide timely feedback to students, which supports the learning experience. This Policy applies to undergraduate and taught postgraduate students who submit assessments, and to postgraduate research students when submitting assessments as part of the structured component of their degree.

Policy on participation in continuous assessment-based modules

Students who are absent from a third of their lectures, tutorials or labs of a continuous assessment-based module or who fail to submit a third of the required coursework will be deemed non-satisfactory. Students reported as non-satisfactory for both semesters' of a given year maybe refused permission to take their examinations and maybe required by the Senior Lecturer to repeat the year.

Return of Coursework Policy

First developed in 2014, this Policy has been renamed the Return of Feedback on Assessments Policy. The Policy now clarifies that students should be provided with clear information on what constitutes feedback and where that feedback can be obtained, and that the deadline for return of feedback on assessed work is proportionate to the size/scope of the assessment, the size of the class, and the assessment type. A distinction is also made in the Policy between deadlines for return of feedback on formative vs summative assessment and the timelines for both are outlined.

Accessible Information Policy

Trinity College Dublin is committed to a policy of equal opportunity in education, and to ensuring that students and staff have a complete and equitable access to all facets of College life as can reasonably be provided.

This document constitutes the current Accessible Information Policy of Trinity College Dublin published in conformity with the requirements of the Disability Act 2005, Universities Act, 1997, the Employment Equality Act, 1998 (as amended) and Equal Status Acts, 2000 (as amended). Further details of the legislative context are referenced in Appendix 1.

Reference/Source:

Student Learning Development

Accessible Information Policy

4.7 Marking Scale

The MSc in Engineering (Environmental / Structural and Geotechnical / Sustainable Energy / Transport Engineering, Policy and Planning) will be awarded Pass and Pass with Distinction (for the Dissertation).
Pass with distinction shall require at 70% in dissertation and at least 70% in the final aggregated mark.
Assessment of individual assignments will be based on common grading criteria as follows:

Grade	Mark (%)
A+	>75
A	70-74
B+	65-69
B	60-64
C+	55-59
C	50-54
FAIL	<50

Table 1: Indicative grades and associated provisional mark range for formative feedback. Marks are finalised at the Court of Examiners.
All marks are provisional until passed by the Court of Examiners meeting, which is held after the end of module teaching.

4.8 Attendance Requirements

Please note that attendance at lectures, tutorials and laboratory sessions is mandatory as is the submission of all work subject to continuous assessment. Regarding online teaching, attendance is mandatory at live lectures, tutorial and labs. Pre-recorded lectures should be viewed at the allocated slot on the timetable. Students who prove lacking in any of these elements may be issued with a Non-Satisfactory form and asked for an explanation for their poor attendance or performance. Students who do not provide a satisfactory explanation can be prevented from sitting the annual examinations.

The College Calendar outlining the College Policy on attendance and related issues, please look at page 46: https://www.tcd.ie/calendar/graduate-studies-higher-degrees/section-III.pdf

Reference/Source:

Calendar Part III, Section I: General Regulations and Information, 'Attendance and Off-Books'; Section III 'Attendance, Registration, Extensions'; Section IV 'Attendance and Examinations'

4.9 Absence from Examinations

The following is an extract from the College Calendar outlining the College Policy on absence from Examinations:

11 Postgraduate students who consider that illness may prevent them from attending an examination (or any part thereof) should consult their medical advisor and request a medical certificate for an appropriate period. If a certificate is granted, it must be presented to the student's Programme Co-ordinator/Director within three days of the beginning of the period of absence from the examination. Such medical certificates must state that the student is unfit to sit examinations. Medical certificates will not be accepted in explanation for poor performance; where an examination has been completed, subsequent withdrawal is not permitted. Further details of procedures subsequent to the submission of medical certificates are available in programme handbooks or from Programme Co-ordinators/Directors.
12 Postgraduate students who consider that other grave cause beyond their control may prevent them from attending an examination (or any part thereof) must consult and inform their Programme Co-ordinator/Director. The Programme Coordinator/Director will then make representations to the Dean of Graduate Studies requesting that permission be granted for absence from the examination.
13 The acceptance of medical disability is entirely at the discretion of the Dean of Graduate Studies, who may ask for a report from the medical officers in charge of the Student Health Service. The report will be strictly confidential to the Dean of Graduate Studies.

Reference/Source:

Calendar Part III, Section III: 'Examinations, Assessment and Progression'; Section IV: 'Attendance and Examinations'

Academic Policies

4.10 External Examiner

Professor Bassam A Izzuddin, PhD, CEng, FIStructE, FREng,
Imperial College London.

Professor Eoghan Clifford, PhD, CEng.
University of Galway.

Reference/Source:

Procedure for the Transfer of Students' Assessed Work to External Examiners

4.11 Progression Regulations

21 The following regulations apply in all courses of study leading to the award of a Masters degree or Postgraduate Diploma.
Graduate students must obtain credit for each academic year of their course by satisfactory completion of course requirements as laid down in the relevant course handbook.
To qualify for the relevant postgraduate award, students must, as a minimum,

(i) achieve an overall pass mark which is normally the credit-weighted average mark for all taught modules taken, and
(ii) achieve a pass mark in all modules designated as non-compensatable in the course handbook, and
(iii) In the case of a Masters degree, achieve a pass mark in the research element or dissertation, and

Additional requirements for specific courses are laid down in the relevant course handbook.

Students failing to pass individual taught modules may present for supplemental examination or re-submit required work if and as provided for in the course regulations. Students who, following the supplemental examination or re-assessment, have failed to pass the requisite taught modules as provided for in the course regulations above will be deemed to have failed the course, and may apply to the relevant school for permission to repeat it.

Students on a Masters course who do not achieve a pass mark in the research element or dissertation but achieve a mark within the range of 40-49% (or 30-39%, where the pass mark is 29 40%) may make one application to the relevant school to repeat this section of their programme. Marks for a new submission will be capped at 50% (or 40 where the pass mark is 40%). Resubmitted research elements must be submitted before the next examination session at a date determined and published by the School. Alternatively, and where this is provided for in the Course regulations, such students may be awarded an associated Postgraduate Diploma.

A thesis Revision Fee will apply for repeated dissertations or research elements. As of May 2023, the fees applicable for EU and Non EU students in each Faculty are as follows:
AHSS: €1,853
HS: €2,174
STEM: €2,174

22 In order to qualify for the award of Masters with Distinction students must have not failed any component during the period of study and must as a minimum, either (i) achieve a final overall average mark for the course of at least 70% and a mark of at least 70% in the dissertation or research element, or (ii) achieve a mark of at least 70% in the dissertation or research element, and achieve at least 68% in the unrounded overall average mark for the taught modules, where modules amounting to at least half of the credits attaching to the taught modules (normally 30 credits) each have a mark of at least 70%, or (iii) in courses in which the modules are assigned

grades only, achieve a distinction in the dissertation or research element and distinctions in modules amounting to at least half of the required credit for the taught element of the course.

23 In order to qualify for the award of Postgraduate Diploma with Distinction students must not have failed any component during the period of study and must as a minimum either 26 (a) achieve an overall credit-weighted average mark of at least 70% across all modules, or (b) achieve at least 68% in the overall credit-weighted average mark and achieve a minimum mark of 70% in individual modules which together amount to at least half of the required credits for the award of the Postgraduate Diploma associated with the student's registered course or (c) in courses in which the modules are assigned grades only, achieve the grade of distinction in individual modules which amount to at least half of the required credit for the Postgraduate Diploma.

The following information relates to all examination results:
i. All postgraduate examination results are published anonymously under a student's registered number.
ii. Students who successfully complete their programme will have the qualification, where appropriate, awarded under their registered name and within grade.

References/Sources:

Calendar, Part III, Section III 'Examinations, Assessment and Progression' and 'Assessment and Progression Regulations'

National Framework for Qualifications

Trinity Courses

4.12 Awards

1) The pass mark for all elements is 50%. The overall mark for the programme is the credit-weighted average of the mark awarded for each module. To pass the taught modules students must achieve an overall average mark on taught modules of at least 50% and pass taught modules amounting to 50 ECTS credits. In the event a student has failed up to 10 ECTS of taught modules it may be possible to "pass by compensation". To "pass by compensation" a student must
   (i) achieve an overall credit-weighted average mark of at least 50% AND
   (ii) achieve a pass mark in taught modules carrying a minimum of 40 credits AND
   (iii) obtain a module mark of at least 40% in any remaining module(s).
2) Students who have failed the taught modules (by virtue of not achieving the overall average mark of 50% and/or not passing taught modules amounting to

50 ECTS credits) may be re-assessed within the academic year with the agreement of the course coordinator. Re-assessment is only available for failed modules amounting to 20 ECTS where at most 15 ECTS of modules were failed in any one semester and none of these modules could have been compensated according to regulations in 1) above.

3) Different modalities of assessment are permitted in the reassessment session as determined by the programme. The same compensation regulations apply to reassessed modules as outlined in 1) above.
4) To qualify for the award of the MSc degree, students must submit a dissertation and achieve a pass mark in both the CE7M03 Dissertation module and the taught modules.
5) In order to qualify for a Masters with Distinction, students must as a minimum a) pass all taught modules, b) achieve a final overall average mark for the programme of at least 70% and c) achieve a mark of at least 70% in the CE7M03 Dissertation module.
6) A Distinction cannot be awarded if a candidate has failed any credit during the programme.

National Framework for Qualifications

The following is an excerpt from National Framework for Qualifications website – "QQI oversees the promotion, development, maintenance, and review of the NFQ as a system of levels for relating different qualifications or awards to one another.

These levels are general indicators of a person's knowledge, skill and competence; or the standards that they have attained for their learning achievements.

NFQ award-type descriptors state general learning achievements for all types of awards recognized on the NFQ. QQI issues NFQ guidelines to providers to support the interpretation and implementation of the NFQ and its award-type descriptors in their programme development."

References/Sources:

National Framework for Qualifications

Trinity Courses

4.13 Professional and Statutory Body Accreditation (if applicable)

The integrated BAI/MAI/MSc in Engineering degree programmes' is professionally accredited by Engineers Ireland and meets the educational requirements for corporate membership of this professional institution and registration as a chartered engineer.

Further information can be found at: http://www.engineersireland.ie/Membership.aspx

4.14 Careers Information and Events

As a Trinity College Dublin student you have access to information, support and guidance from the professional team of Careers Consultants throughout your time at Trinity and for a year after you graduate.

The support offered includes individual career guidance appointments, CV and LinkedIn profile clinics and practice interviews. The Trinity Careers Service and the School of Engineering & Environment also hold an annual Careers Fair in October.

Which gives you the opportunity to find out about career prospects in a wide range of companies. · Visit https://www.tcd.ie/Careers/for career and job search advice

Sign into MyCareer to book appointments, find information about vacancies and bursaries, and book your place on upcoming employer events.

Follow the service on Instagram for career news and advice @trinity.careers.service

FAIR DATE TIME PLACE

Computing and Technology	Thursday, 2nd October 2025, 11:30 am – 14:30 pm	Trinity Sports Hall
Engineering & Environment	Thursday 9th October 2025, 11:30am – 14:30pm	Trinity Sports Hall

4.15 Student Feedback and Evaluation

The following is an excerpt from Quality Office, Trinity Teaching and Learning:

Annual postgraduate taught course evaluation – evaluated on two occasions using agreed on-line template questionnaires – at the end of the taught component and at the time of submission of the dissertation. Faculty Offices are responsible for administering these surveys

and on alternate years Schools may use other forms of evaluation at a local level.

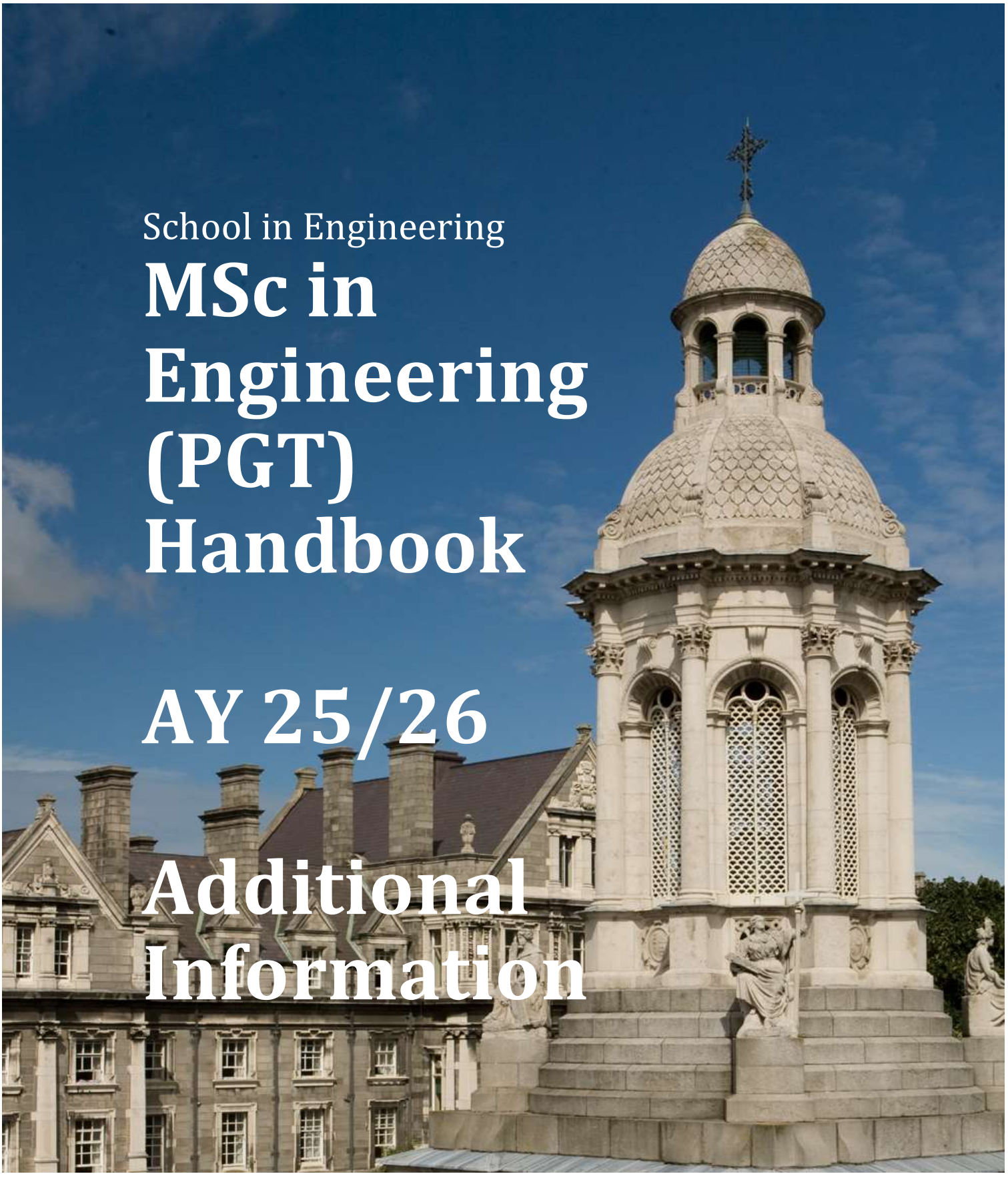
References/Sources:

Student Evaluation and Feedback

Student Partnership Policy

Procedure for the conduct of Focus Groups for Student Feedback on Modules and Programmes

Trinity College Dublin
Coláiste na Tríonóide, Baile Átha Cliath
The University of Dublin



School in Engineering

MSc in Engineering (PGT) Handbook

AY 25/26

Additional Information

1. Student Services

Student Services has provided the following Student Services Handbook outlining the support Services provided to undergraduate and postgraduate students.

1.1 Academic Support

Student Learning Development	http://student-learning.tcd.ie/
The Library	http://www.tcd.ie/library/
Maths Help Room	http://maths.tcd.ie/outreach/helproom/
Undergraduate Programming Centre	http://www.scss.tcd.ie/misc/psc/
Language Learning Centre	http://www.tcd.ie/slscs/clcs/llc/
English for Academic Purposes	https://www.tcd.ie/slscs/english/
Disability Service	http://www.tcd.ie/disability/
Careers Service	http://www.tcd.ie/Careers/

1.2 Health and Wellbeing Support

Student Counselling	http://www.tcd.ie/Student_Counselling/
Health Centre	http://www.tcd.ie/collegehealth/
Sport	http://www.tcd.ie/Sport/
Healthy Trinity	http://www.tcd.ie/healthytrinity/
Student2Student	http://student2student.tcd.ie/
Chaplaincy	http://www.tcd.ie/Chaplaincy/

1.3 Getting involved

Students' Union	http://www.tcdsu.org/
Clubs	http://www.tcd.ie/Sport/student-sport/
Societies	http://trinitysocieties.ie/
Volunteering	http://www.tcd.ie/civicengagement/
Entrepreneurship/Tangent	http://www.tcd.ie/tangent/
Global Room	http://www.tcd.ie/study/international/trinity- life/global-room/

1.4 Financial Support

Senior Tutor's Office*	http://www.tcd.ie/seniortutor/students/undergraduate/financial-assistance/
Students' Union Welfare Loans	http://www.tcdsu.org/welfare/
Bursaries/Prizes (Undergraduate)	http://www.tcd.ie/calendar/undergraduate-studies/ (Part D: 11 - Prizes and other awards)

Bursaries/Prizes (Postgraduate)	https://www.tcd.ie/calendar/graduate-studies- higher-degrees/ (Section XI: Postgraduate Awards and Travel Funds)
Exhibitions	http://www.tcd.ie/calendar/undergraduate-studies/ (Part D: 8 - Entrance Awards)
Scholarships	http://www.tcd.ie/study/undergraduate/scholarships-funding/

*****Remember, you can ask your Tutor for advice and guidance about anything and they will point you in the right direction

1.5 Administrative Support

Your Tutor	http://www.tcd.ie/seniortutor/
Postgraduate Advisory Service	http://www.tcd.ie/seniortutor/students/postgraduate
Academic Registry	http://www.tcd.ie/academicregistry/

1.6 Your Tutor

The Programme Director is the Tutor for the postgraduate students that are registered on the programme.
You should see your Tutor whenever you have a question or are worried or concerned about any aspect of College life or your personal life, in particular if this is affecting your academic work.
Everything you say to your Tutor is in strict confidence. Whilst your Tutor may not be able to solve the underlying problem, they can find the best way to limit the impact of your situation on your College work.
Tutors can help with **academic advice, changing course, withdrawing from College, exam regulations, financial assistance and personal advice**.

1.7 Postgraduate Advisory Service

The Postgraduate Advisory Service offers free, independent, and confidential support, guidance and advocacy to registered postgraduate students. They are here to provide support on any matter that may impact upon your time as a postgraduate at Trinity.
Some of the most common issues students come to PAS to discuss include: study-related stress or worry; concerns about academic progress; supervisor-relationship concerns; extensions and going off-books; queries regarding regulations and academic appeals; bullying; plagiarism and disciplinary cases, financial assistance. Academic Registry

1.8 Academic Registry