



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



# MSc in Climate Adaptation Engineering

Postgraduate Taught

[tcd.ie](https://www.tcd.ie) ----->

MSc

# Climate Adaptation Engineering

## About the Programme

The MSc in Climate Adaptation Engineering at Trinity College Dublin is a cutting-edge programme designed to equip students with the essential skills to address the urgent challenges posed by climate change. This programme focuses on developing practical climate adaptation solutions through the lens of engineering and applied science. Students will gain technical and practical expertise by engaging with core interdisciplinary modules and participating in a unique, industry-led professional project.

The curriculum is aligned with the United Nations Sustainable Development Goals Nations' emphasising Sustainability-oriented design and effective management strategies of finite resources in both the built and natural environments. Graduates will emerge with the knowledge and innovation capacity to lead climate adaptation efforts, elivering resilience for key sectors in the economy.

As climate change more evidently impacts this planet,, the need to respond with sustainable solutions that protects the future of our society and our environment is a central focus in the taught and research elements of this programme. We want to prepare our graduates with the skills to meet these challenges head-on, positioning them as leaders in both public and private sectors with the expertise to drive technical and policy solutions.

## Curriculum

The MSc in Climate Adaptation Engineering is a full-time, one-year programme comprising 90 ECTS credits, divided into 60 ECTS of taught modules and a 30 ECTS industry-led project/dissertation.

## Programme Aims

### -----> Understanding Climate Challenges:

Develop a deep understanding of the current and future challenges related to climate change at local, national, and global levels.

### -----> Strategic Planning:

Analyse complex engineering and applied science problems to support strategic planning for resilient infrastructure and to protect the natural environment.

### -----> Scientific Methodology:

Conduct experiments and apply scientific and statistical tools to evaluate and support climate adaptation efforts.

### -----> Innovative Design:

Perform assessments and create innovative engineering- and nature-based designs that support climate adaptation strategies.

### -----> Multidisciplinary Collaboration:

Work effectively in multidisciplinary teams to deliver climate adaptation measures for both public and private sectors.

### -----> Industry-Led Project:

Engage in a collaborative, industry-led project to apply theoretical knowledge to real-world climate adaptation challenges.

## Core modules

- Introduction to Climate Adaptation Engineering
- Global Environmental Change
- Advanced Spatial Analysis using GIS
- Introduction to Machine Learning
- Climate Adaptation Engineering Challenge
- Adaptation Planning for Infrastructure
- Civil Engineering for Sustainable Development
- Measuring Environmental Impact: Life Cycle Assessment in Engineering
- Human Interactions with Biodiversity
- Industry-led Climate Adaptation Research Project





Innovative designs  
to implement future  
strategies



Engage with  
real-world adaptation  
challenges

#### Elective Modules may include:

- > Transportation Modelling & Planning
- > Energy Policy & Storage
- > Bridge Engineering
- > Sustainable Water Supply & Sanitation
- > Climate Justice, Climate Change & Development
- > Advance Linear Modelling 1
- > Water Resource Planning & Climate Change
- > Smart Ecocities of the Future
- > Practical Environmental Assessment / Environmental Policies
- > Wind Energy
- > Wave & Hydro Energy

## Industry Research Project or Dissertation

The industry-led climate adaptation research project is a standout feature of this course, offering hands-on experience in tackling real-world climate challenges. Students may have the opportunity to engage with industry to produce valuable outputs that strengthen organisations capacity to respond to climate change. Each project benefits from being shaped by public and private sector actors. Students will either work directly with an organisation to create practical outputs or conducting an independent research project with industry consultation.

The research module involves developing a proposal, producing a scoping report, delivering an interim presentation, and writing a final report. This approach ensures real-world relevance and aligns with Trinity College's research framework, blending industry collaboration with traditional research methods. Full details are provided in the programme handbook.



## Features & Benefits

- > **Highly Interactive Lessons:**  
Students have opportunities to develop and apply their presentation skills, analyse real life case studies and work in group assignments.
- > **International Network:**  
Study alongside students from all over the world.
- > **Strong Industry and Partnership Approach:**  
Students participate in an industry-led professional project and several transdisciplinary group projects.
- > **Comprehensive Climate Adaptation Focus:**  
The programme equips students with technical and practical expertise to address climate challenges through innovative engineering and nature-based solutions, aligned with UN Sustainable Development Goals.
- > **Multidisciplinary Collaboration:**  
The curriculum fosters interdisciplinary activities, preparing graduates to work in diverse teams within both public and private sectors to deliver effective climate adaptation measures.
- > **Global and Practical Learning Environment:**  
The programme offers a blend of interactive lessons, case studies, and group assignments, and aims to develop competences in graduates related to strategic thinking, problem-solving and collaboration.





A strategy to plan for a sustainable future



Understanding the importance of climate change

## Career Prospects

Graduates of the MSc in Climate Adaptation Engineering will be equipped with the technical expertise and practical experience to excel in a rapidly growing field. The programme prepares students for careers in both the public and private sectors, including environmental consulting, infrastructure planning, and sustainability-focused engineering and applied science roles. Typical employers include sustainability organisations, government consultancies and utility companies, local authorities, and government agencies.

Graduates may also find opportunities in global organisations focused on climate resilience, policy development, and disaster management. With the increasing global demand for professionals skilled in climate adaptation, graduates of this programme will be well-positioned to take on leadership roles in designing and implementing sustainable solutions for a climate-resilient future.

## Entry Requirements

Admission to the course is competitive. Applicants will be expected to have an Honours Bachelor's degree at 2.1 or above, in a STEM (science, technology, engineering or mathematics), architecture, urban planning, or a related cognate discipline. Well-qualified candidates or industry professionals from other numerate disciplines who have attained knowledge and experience and knowledge, may also be considered for admission purposes subject to the decision of the Dean of Graduate Studies.

In case of heavy competition for places or concerns regarding a particular applicant's suitability, applicants may be interviewed and/or asked to submit a written sample for assessment.



## MSc in Climate Adaptation Engineering

### Course Group:

Postgraduate Taught

### Course Duration and Mode of Delivery:

- > **Duration:** 1 year full-time
- > **Delivery Mode:** Blended learning
- > **Classroom-Based:** Around 90% of the programme.
- > **Online:** Approximately 10%, though this may vary depending on chosen modules.

### Assessment Model:

The final mark is determined by a credit-weighted average of the marks awarded across all modules.

### Key Dates:

- > **Course Start Date:** September 2025
- > **Application Deadline:** 31st June 2025

