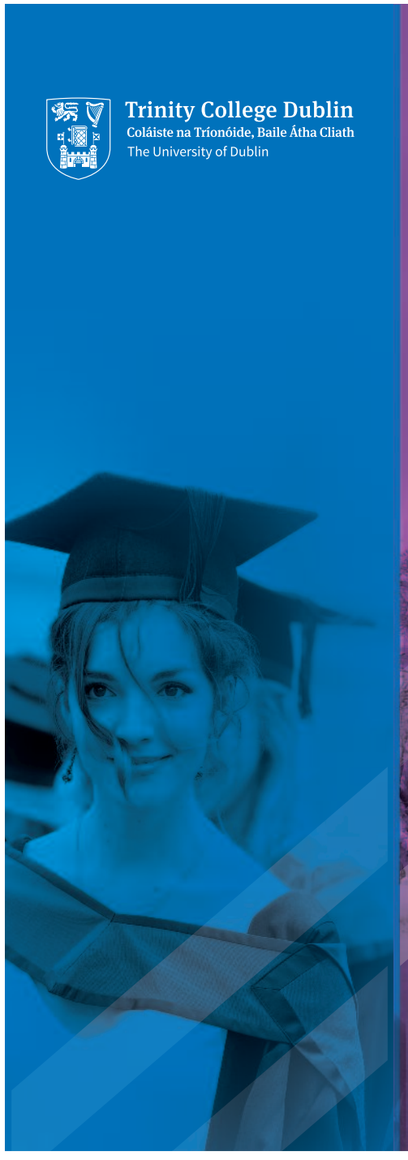
Trinity College Dublin
Coláiste na Tríonóide, Baile Átha Cliath
The University of Dublin



www.tcd.ie/Undergraduate/e3

Trinity College Dublin
Coláiste na Tríonóide, Baile Átha Cliath
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Undergraduate Degree in Environmental Science and Engineering 2021

(with option of integrated Masters)

Balanced solutions for a better world

www.tcd.ie/Undergraduate/e3

Environmental Science and Engineering

What is Environmental Science and Engineering?

Environmental Science and Engineering is a new integrated undergraduate (4 years) with postgraduate (+1 year) degree course. It that aims to train the next generation of graduates to have the competencies, knowledge and experience necessary to design and deploy solutions that protect and improve our environment and human wellbeing.

The B.Sc /M.A.I. MAES degree programme is based on two foundation years of environmental science and engineering modules, providing students with a firm grounding in the principles common to both disciplines, followed by three years of specialisation (in either environmental science or environmental engineering). Students therefore complete an integrated five-year course consisting of a four year B.Sc. plus an additional year of study leading to either a Master in Engineering (Studies) M.A.I. (St.) or a Master in Applied Environmental Science MAES.

The programme offers students the opportunity to tailor their degree in accordance with their academic results, interests, aptitudes and emerging career aspirations.

Environmental Science and Engineering: The course for you?

The degree in Environmental Science and Engineering is taught by scientists in the School of Natural Sciences and engineers from the School of Engineering. It arises from a unique collaboration between two leading Trinity Schools that have expertise across a wide range of subject areas from Environmental Science to Civil, Structural and Environmental Engineering and is one of the first of its kind in Ireland an internationally.

The degree structure is designed to provide for the needs of students with an interest in these emerging, multi-disciplinary professional and academic fields. The course provides students with a fundamental grounding in natural sciences and engineering, and in the applied skills required to develop sustainable solutions for major societal and environmental challenges.

Strong emphasis is placed on students acquiring practical laboratory and field skills, as well as working in teams and in industry placements.

Environmental Science and Engineering at Trinity

The School of Natural Sciences is engaged with solving some of the major challenges facing human society through teaching, research and partnership with industry and policy development, both nationally and globally. Research on biodiversity, climate action, peatlands, marine ecosystems, sustainable cities, environmental governance and the sustainable use of Earth's natural resources are all areas of expertise. The School comprises of the disciplines of Botany, Geography, Geology and Zoology and two research centres, both with strong environmental focus.

Trinity's School of Engineering was founded in 1841 and is one of the oldest engineering schools in the English speaking world. The Baccalaureus in Arte Ingeniaria (BAI) degree was established in 1872 and early graduates played a major role in the development of government services and infra-structure in 19th century Ireland, India, Australia, Africa and Japan. Trinity is ranked in the top 120 in the world for studying Engineering (QS World Subject Rankings 2020).

Together, both Schools offer an exceptionally vibrant, multi-disciplinary community of innovative researchers and teachers who gain provide students the breadth and depth of knowledge and understanding needed to address some of the most pressing environmental challenges facing Ireland and the world. The degree ensures that graduates can make complex connections from the design of windfarms to maintaining wildflower meadows, from the technical underpinning of solar power generation to the creation of clean water, from sustainable seaweed farming, to novel negative carbon emission technologies and from coastal protection to sea level rise. This course covers a wide range of essential topics before specialisation in one of two streams – Environmental Engineering or Applied Environmental Science.

Graduate skills and career opportunities

Graduates will have a strong grounding in Environmental Science in conjunction with applied Engineering skills and problem-solving capability. Students will therefore be at the forefront of initiatives to address the challenges set out within the United Nations Sustainable Development Goals.

Graduates of Environmental Science and Engineering will be highly skilled and employable in both industrial and governmental organisations in Ireland as well as overseas; recent graduates from the Civil Engineering stream who have specialised in Environmental Engineering are working in R&D, Civil Engineering and Environmental Consultancies, Project Engineers, Environmental Regulation, Energy companies, mining companies as well as setting-up new ventures and spin outs.

Environmental Science and Engineering

21st century in key areas such as in conservation, monitoring and protection of biodiversity, the protection of human health through protection of the environment, mitigation and adaptation to climate change and the move towards a zero carbon future.

Innovation is a core attribute of the Environmental Science and Engineering programme which will provide students with skills in design thinking, entrepreneurship andcreativity enabling students the opportunity to be involved in exciting innovative new developments in environmental engineering and sciences in their broadest sense and to consider holistically their impact on the natural environmental and our stocks of natural capital (woodlands, peatlands, rivers, mineral resources).

Our graduates are also working in the design and development of environmental solutions with leading engineering consultancies such as ARUP, RPS, ESB International, Shell, IBM. Such companies have a strong demand for high quality graduates at the Masters (and PhD) level due to the high technical level of their work.

Environmental Engineers and Scientists also find employment in governmental regulatory organisations and other institutions such as Local Authorities, Environmental Protection Agency, Geological Survey Ireland Teagsac as well job in Humanitarian NGOs (Concern, GOAL, Selfhelp Africa), as well as going to further studies and jobs in academia both in Ireland and overseas.

Graduates will possess a unique broad set of attributes associated with both engineering and natural sciences graduates (Level 8 and 9) such as analytical, modelling, problem solving, design, collaborative team working, professional ethics, global perspective and communication skill sets.

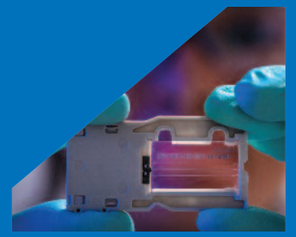
They will be able to operate at the forefront of developments in the environmental field in the

Your degree and what you'll study

Drawing on the expertise of the School of Engineering and the School of Natural Science at Trinity, this programme focuses on delivering a research-inspired, outcome-based educational experience to students.

Students complete an integrated five-year course consisting of a four year B.Sc. plus an additional year of study leading to a M.A.I. (St.) or MAES. During the first two years a balanced and integrated programme of modules in environmental science and engineering is provided.

Following completion of the first two years of the course, students start to follow a more specialised programme in one of the following strands, although there is still many shared courses and projects between the two strands.



To study at Trinity
is to become part of a global community of thinkers, creators, scientists, artists, inventors and entrepreneurs spanning 158 countries and over 425 years

YEAR 1 YEAR 2

Integrated programme of modules

Common

Environmental Science

and

Environmental Engineering

modules

YEAR 3

Specialised stream

Environmental Science

or

Environmental Engineering

YEAR 4

B.Sc in Environmental Science Industry Internship

or

BSc. in Environmental Engineering Industry Internship

International Exchange in Environmental Science

or

International Exchange in Environmental Engineering

Capstone Project + min. of 2 optional modules

YEAR 5

Masters Research Project

Graduate with M.A.I. (St.) Environmental Science

or

Graduate with MAES degree Environmental Engineering

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2

Environmental Engineering
This strand of the Environmental Science and Engineering course places stronger emphasis on modules and project work with an engineering focus in years 4 and 5.

Applied Environmental Science
This strand of the Environmental Science and Engineering course places stronger emphasis on modules and project work in the discipline of environmental sciences in years 4 and 5.

In Year 4, students have the option to undertake an Industry Internship or International Exchange in their chosen stream. These options include Erasmus, UNITECH (as a paid industrial partnership) and CLUSTER. Full details of available options are available from the School of Engineering and School of Natural Sciences office and on their websites. Alternatively, a student can stay for the full year in Trinity and undertake a Capstone Project module which aligns with their chosen stream, in addition to at least 2 optional modules associated with their chosen stream.

Following completion of the fourth year of the environmental science and engineering degree course, tis i anticipated that most eligible students would elect to complete one further year of study in their chosen strand leading to a M.A.I. (St.) or MAES degree.

Environmental Science and Engineering

Study abroad and language options
Students who spend the first semester of Year 4 in Trinity College may then spend the second semester on an industrial/ government agency placement where they complete an industry-based project. Students following this mode will have two project supervisors: a staff member of the host company (to provide day-to- day guidance whilst on placement as well as to liaise with TCD) and a member of the Department's academic staff.

Alternatively, students who have chosen the Environmental Engineering streams may opt to spend the fourth year on the Cluster/Unitech programme in a partner University, or on an Erasmus+ exchange as per existing MAI Students who have chosen the Applied Environmental Science route may opt to spend the fourth year on an Erasmus+ exchange. The Erasmus programme will build on a current shared programme run by the Schools of Natural Sciences and Engineering.

Contact Us

If you have any questions about studying this new integrated degree, please get in touch with us!- and contact us at **e3.team@tcd.ie**

If you have further questions about the application process you can contact the Applications and Admissions Team in Trinity's

Academic Registry,
Watts Building,
Trinity College Dublin,
Dublin 2,
Ireland
Phone: +353 (0) 1 896 4500
academic.registry@tcd.ie

Meeting the demands of the UN Sustainable Development Goals

STUDY

Above: Artist impressions of the new E3 Martin Naughton Learning Foundry (which is due for completion in 2023)

Rialtas na hÉireann Government of Ireland
Tionscadal Éireann Project Ireland 2040