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

School of Natural Sciences

MSc Environmental Sciences

2025-2026

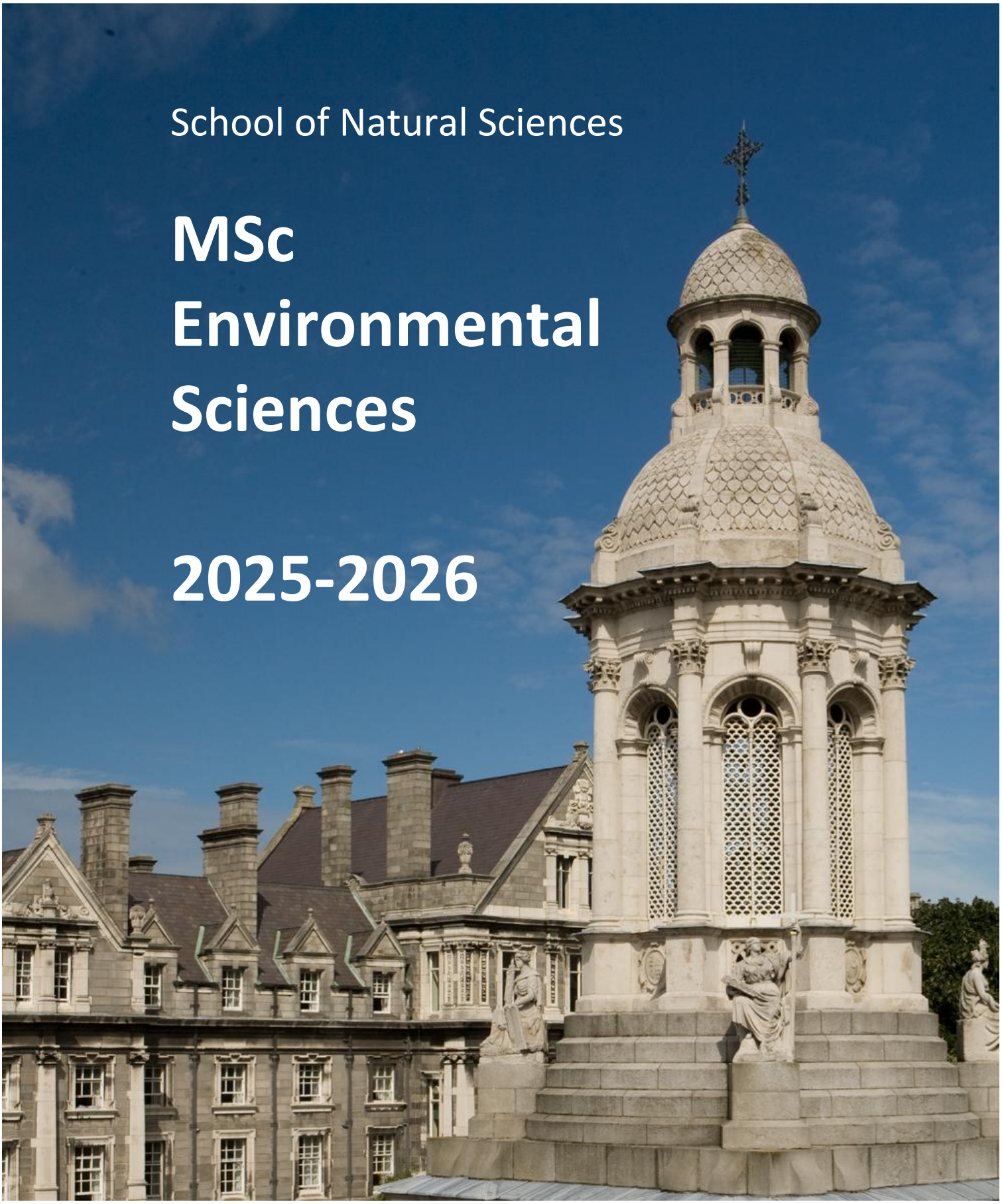


Table of Contents

Welcome

Welcome to the School of Natural Sciences!

Many environmental education initiatives took place during the early 1970s following the 1972 United Nations Conference on the Human Environment held in Stockholm (known universally as the Stockholm Conference). The United Nations Environment Programme (UNEP) was one product of the Stockholm Conference that was later to play an important role in stimulating and co-ordinating education initiatives (see www.unep.org). In the years that followed, many environmental education courses were developed in universities and colleges throughout the world and by the early 1980s environmental training and education had become an important topic of debate. The year 1983 was another important milestone in the development of environmental training and education because in that year the Secretary General of the United Nations established the World Commission on Environment and Development (WCED). The WCED published Our Common Future in 1987, which brought to widespread attention the concept of sustainability. In this report the importance of interdisciplinary environmental education was stressed and shown to be the key mechanism towards the goal of a sustainable world. In 1989 the UN resolved to hold a conference on environment and development, the Earth Summit. It is significant that environmental education and training was also an important topic for discussion at the first Earth Summit in 1992, 20 years after the Stockholm Conference. At the Earth Summit the Global Forum of Non-Governmental Organizations promoted Agenda 21, which included the statement "Governments should strive to update and prepare strategies aimed at integrating environment and development as a cross-cutting issue into education at all levels".

In the late 1970s the Irish Government responded to the call from UNEP to set up courses for environmental protection in Europe, an area new in Ireland. Trinity College was invited by the Higher Education Authority (HEA) in 1977 to provide a postgraduate research centre for Environmental Science that would offer not only a strong research base but also suitable training and qualifications for those who would have to implement the new

legislation from Europe. Prof. W.A. Watts, supported by the heads of the Science Departments, developed the first interdisciplinary teaching and research centre in the country. The Environmental Sciences Unit was officially opened in October 1979, although the MSc Environmental Sciences course first ran the following year when staff and the Unit laboratory moved into the premises at 188-189 Pearse Street. The HEA initially funded three lectureships on a permanent basis, two permanent and one permanent contract position to be renewed every three years to ensure that the Unit retained the flexibility in teaching required within the changing needs of the State, an innovative idea at the time. The staff were increased by a further three posts in the late 1980s to give the Unit a broader academic base. In the late 1990s the Science Faculty made radical changes to the structure of the Unit, which had become too large to remain in its original form. Staff were allocated to existing Departments and the Unit was replaced by a more flexible structure serviced through College Departments. The Centre for the Environment was set up in October 1998, and managed the MSc Programme until 2005, when a further restructuring brought the course to its current home in the School of Natural Sciences.

The MSc programme was the first environmental science course in Ireland. Course graduates have been instrumental in the development of environmental protection and management in Ireland, with many early graduates now holding senior Government and European posts. More recently the Irish Environmental Protection Agency has also been a major employer of course graduates, although our graduates have found employment throughout the world. For example, a number of our graduates work for the US Environmental Protection Agency and many graduates have contributed significantly to the development of environmental consultancy in Ireland and abroad. The course has always attracted students from overseas and this provides an important contribution to the experience that students bring to the course.

The course has changed continuously over the years responding to the needs of both students and employers. No two years are the same. However, the key concept of the course has remained unchanged: to produce environmental scientists with an interdisciplinary background able to tackle the broadest range of environmental protection

issues. As new members of the MSc Environmental Sciences course we hope that you will play your part in creating a safer and more sustainable environment for all.

Foreword

This programme will provide in-depth training and experience for those looking to further their career in various aspects of Environmental Science, for students wishing to pursue further post- graduate research in this area, and for professionals already working in Environmental Science wishing to obtain relevant qualifications.

This booklet contains contact information on the module coordinators and other personnel associated with the programme; an outline of the course and module structure; key deliverables and milestones; and general information on requirements and expectations.

The full timetable for each semester will be available via the my.tcd.ie portal.

The course is comprised of 10 compulsory modules (including a fieldtrip) which are each worth 5 ECTS (credits), a project planning module which is worth 10 ECTS, and a Dissertation module, worth 30 ECTS.

Students will have access to all library facilities in TCD. Students are encouraged to avail of all resources and materials locally and online. Students are required to secure an appropriate supervisor for their dissertation. Students should identify an appropriate supervisor on the basis of the topic they have selected, and their general research interests in consultation with the module coordinator.

Please familiarize yourself with College's regulations for postgraduate students. These are available in Part III of the Calendar, accessed at

https://www.tcd.ie/calendar/graduate-studies-higher-degrees/

Your @tcd.ie email account is the only e-mail address used for official College business. Consult this email account regularly. Your personal data is kept in accordance with the Student Data Policy:

https://www.tcd.ie/info_compliance/data-protection/student-data/

College regulations require that you remain resident in the Republic of Ireland, in or near Dublin during your studies. Absence for a substantial period in either of the teaching terms is not permitted. Research abroad is permitted only with the approval of your Course Coordinator.

Although the information in this handbook is correct at the time of production, the precise content of the course is subject to change. While every effort will be made to give due notice of major changes, the School Office reserves the right to suspend, alter or initiate courses, timetables, examinations and regulations at any time.

NOTE **Students should expect to pay fees for mandatory field courses, which can take place in the 1st week of Semester 1 as well as reading week and final week of Semester 2. Fees can range from €500 to €1000 for any given field course. Details will be confirmed in advance by the Module Coordinator.*****

Module coordinators List

Prof Gerald Dickens (dickensg@tcd.ie) is a Professor in Geology. His research interests include paleoceanography, carbon cycling, environmental chemistry and sedimentology. He has participated in many field expeditions and has taught numerous field modules. Jerry coordinates the field module ES7049: Practical Environmental Skills

Prof Quentin Crowley (crowleyq@tcd.ie) is a Professor in Geology, and Director of the Trinity Centre for the Environment. His current research interests include Earth System change, systems innovation, environmental geoscience, and environmental contaminants. He collaborates widely on a number of projects with geologists, geographers, environmental

scientists, archaeologists, statisticians, epidemiologists, engineers and physicists. Quentin co-ordinates modules ES7057: Navigating Complexity for Sustainable Futures.

Prof Andrew Jackson (a.jackson@tcd.ie) is a Professor in Zoology. His research interests centre on understanding ecological systems and processes from an evolutionary perspective via the use of computational / mathematical models. His primary areas of interest are behavioural ecology and community ecology, but he has also published in areas of conservation biology, virology and epidemiology. In addition, he develops Bayesian statistical tools for ecologists, such as stable isotope mixing models. Andrew co-ordinates the module ES7042: Data Handling and Analysis.

Dr Sean McClenaghan (mcclens@tcd.ie) is an Associate Professor in Economic Geology in the Department of Geology. Sean's research focuses on dissecting ore deposit systems through the application of bulk geochemical and advanced micro-analytical techniques. Much of this research has centred on the mineralogy and residence of precious metals and energy critical elements in sulphide and gangue minerals from ore deposits as well as waste tailings. Sean coordinates the module ES7028: Resource Development and Environmental Management.

Dr Jeremy J. Piggott (jeremy.piggott@tcd.ie) is Assistant Professor in Aquatic Biology. His research focuses on several topical themes in fundamental and applied ecology, including the determinants of biodiversity structure and function from genes to ecosystems, the combined influence of multiple anthropogenic stressors on communities and ecosystems, and the management and conservation of biodiversity and ecosystem services in the face of global change. Jeremy coordinates module ES7056 Environmental Monitoring.

Dr. Juan Diego Rodriguez-Blanco (rodrigjd@tcd.ie) is an Ussher Associate Professor in Nanomineralogy. Juan Diego's fields of research are environmental mineralogy and crystallisation. His research focuses on mineral genesis and the interaction of aqueous species with mineral surfaces. In particular, he studies the mechanisms of mineral nucleation and growth and the interaction of common seawater ions, pollutants and organics with mineral surfaces and their relevance to global-scale processes like biomineralisation, biogeochemical element cycling and the evolution of the global chemistry of the oceans. Juan Diego is the

Director of this MSc program and coordinates the module ES7001: MSc Environmental Sciences Induction Week.

Dr Micha Ruhl (ruhlm@tcd.ie) is an Associate Professor in Sedimentology in the Department of Geology. Micha completed his BSc, MSc and PhD in Earth Sciences at Utrecht University, Netherlands. He has held post-doctoral research posts at the University of Oxford, University of Copenhagen and the Geological Survey of the Netherlands. His research interests centre on understanding the processes that govern the earth system on land and in the oceans, and through time. In his research, Micha applies Sedimentology, Integrated (chemo-, bio-, cyclo-, magneto) Stratigraphy and Low-Temperature Geochemistry to study a diverse range of topics related to Palaeoclimatic & -environmental Change, Mass Extinctions, and (changes in) Depositional Environments. Micha coordinates the module ES7055: Earth System Science – Deep Time.

Dr Jean Wilson (wilsonj1@tcd.ie) is a Postgraduate Teaching Fellow for both the MSc in Environmental Science and the MSc in Biodiversity and Conservation. Jean's research interests centre on environmental applications of remote sensing, GIS and spatial analysis, specifically in the context of water resources monitoring and management. Her work was funded from 2009 to 2017 under the EPA STRIVE initiative. She has developed novel methodologies in the application of thermal remote sensing and geochemical tracing techniques for localising and assessing groundwater discharge to lakes and coastal waters nationally. In addition to teaching ES7062 Geographical Information Systems Jean coordinates the MSc module ES7027 Environmental Policies.

Dr Alex Cabral (alex.cabral@tcd.ie) is an Assistant Professor in Hydrogeology. His research interests focus on groundwater–surface water interactions and their influence on carbon and nutrient fluxes across freshwater, estuarine and marine environments. He uses isotope tracers and automated field instrumentation to study groundwater discharge, porewater exchange, solute transport and greenhouse gas emissions. Alex coordinates the module ES7043: Hydrology and Groundwater Quality and teaches in the module ES7049: Practical Environmental Skills.

Other Teaching Staff

Several staff contribute their expertise to the course via the supervision of research projects. In addition, you may contact staff within the School of Natural Sciences regarding projects related to their research interests. See the School research webpages for details (http://www.tcd.ie/naturalscience/), as well as the research pages of the individual staff / disciplines.

Course Administration Staff

Programme Director	Dr Juan Diego Rodriguez Blanco	rodrigjd@tcd.ie
Postgraduate Administrative Officer	Mr George Oatridge	oatridgg@tcd.ie

Module Selection

There are no optional modules, also known as Trinity Electives, available for this course. All modules are core.

Academic Year Structure

*****IMPORTANT – THIS IS A FULL-TIME COURSE*****

This is a post-graduate qualification and therefore contains a considerable component of independent study (student centred, self-directed learning). It is vital that you effectively manage the time spent outside of classes. The course structure assumes a nominal 40 to 50 hour week, although there will inevitably be some variability of workload throughout the year. This is especially the case as enrolled students usually come from a wide range of backgrounds with diverse skills and knowledge. This diversity (and the breadth of Environmental Science as a subject) may mean that you are unfamiliar with some basic concepts during the course. This will require extra reading for familiarisation of subjects that you may not have studied previously.

Please note that certain components of the course (e.g. seminars or field trips) may occasionally involve evening or weekend work, so please consult your timetables carefully.

IMPORTANT: non-attendance due to paid employment is not an acceptable excuse or mitigating circumstance!

This is a one year, full-time postgraduate qualification that will lead to a Master of Science in Environmental Sciences. As part of the Bologna Process, Trinity College ascribes credit to taught courses using the European Credit Transfer System (ECTS). This course is worth **90 ECTS**. *One ECTS is equivalent to 20-25 hours of student input, and therefore includes formal contact time (e.g. lectures), independent study, research, assessment exercises, revision etc. In this way, 2 ECTS is nominally about one week of work.*

Taught Component

The taught component of this course comprises formal lectures, seminars, laboratory and desk-based practical work, fieldwork and independent study.

The course commences with a compulsory Induction Week which commences Monday 8th September. This is preceded by a college-wide post-graduate orientation week, which is aimed at students new to TCD and perhaps new to Ireland.

This MSc program includes **TEN TAUGHT MODULES** worth 5 ECTS each (see Taught Modules for details). In addition, there is a Project Planning module worth **10 ECTS** (see Project Planning for details). The combined taught component of this MSc program therefore comprises **60 ECTS** (equivalent to a postgraduate diploma). There is also a dissertation module (MSc thesis) worth **30 ECTS**.

Module Delivery

Most taught modules in this course are three week blocks (see timetable). This provides a concentrated period of uninterrupted study, during which time students can immerse themselves in the subject matter and ensure they have addressed any gaps in their

knowledge. Assessment for each module will usually take place during these blocks unless otherwise stated in the module outline.

Trinity College encourages use of Blackboard teaching and learning software. To access Blackboard Learn 9.1 please go to http://mymodule.tcd.ie and enter your College username and password to login. For tutorials please visit the On Demand Learning Centre for Students http://ondemand.blackboard.com/students.htm . Please consult with your module coordinator to check if they are actively using Blackboard for their module(s) on this course.

Timetabling

A general timetable for the course is included at the back of this handbook. Detailed timetables for each module will be circulated prior to the start of each teaching term. Timetables are subject to change, so please check carefully all email correspondence from module co-ordinators.

Research Project ES7052

To complete the MSc degree programme a candidate must design and execute an individual research project. This project is worth **30 ECTS**.

Further details concerning choice and design of the project along with requirements for the final dissertation will be given to you in the *'Project Planning'* module.

Trinity College Dublin has strict regulations regarding extensions to submission deadlines. Extensions are granted solely on medical or bereavement grounds, and in both cases documented evidence is required (e.g., a signed letter from a medical professional or an official bereavement notice such as RIP.ie). Requests for extensions on the basis of delays in data collection (e.g., issues with fieldwork or laboratory work), data analysis, or similar circumstances will not be considered, even where such delays are outside the student's

control. Consequently, students are responsible for ensuring that the scope of their work can be completed within the allocated timeframe. Extensions must be formally approved in advance by both the supervisor and the Course Director. In the absence of such approval, a penalty of 10% per day will be applied to late submissions. Dissertations submitted three or more days beyond the deadline will not be graded for Autumn graduation."

Dates to note:

Event(s)	Date(s)
Semester one starts	Monday, 15 September 2025
Semester one ends	Sunday, 14 December 2025
Semester two starts	Monday, 19 January 2026
Semester two ends	Sunday, 19 April 2026
Publication of results	November 2026, exact date tbc

Please note that teaching weeks are indicative. Please refer to your timetable for the start and end dates of teaching for each semester, as some modules will include an assessment after the timetabled weeks.

Assessment Information

Assessments must be submitted by the time and date stipulated by the module co-ordinator in the timetable; any hard copy submission will normally be to the Programme Administrator in the School Office. All work will also be submitted by the SafeAssign feature on Blackboard. Each assessment must include a title page giving the name and number of the student, the module title and the date, and the College Plagiarism Declaration.

It is your responsibility to ensure work is signed for on receipt as a record of submission. You should keep hard copies of all work that you submit.

Assessments submitted after the deadline will receive a 10% deduction in the final mark for each working day late. Assessments will not be marked if more than two working days late unless by prior, written agreement with the module co-ordinator.

Marking and Feedback

Unless otherwise stated, indicative grades (see Table 1 for details) will be circulated within one month of submission. A date and time will also be circulated at which you can collect assessed work.

All marks are provisional until passed by the final Court of Examiners meeting with the External Examiner in attendance, which typically occurs in late October or early November.

All assessed work **MUST BE RETURNED** prior to the first Court of Examiners meeting. The deadline for return of work will be circulated during the second semester.

Module Failure & Re-submission

Students must undertake **ALL 60 ECTS** of the taught component of this course and achieve a **pass** prior to embarking on the **Research Project**. A minimum pass grade must be obtained for the **Project Planning** module in order to progress to the **Research Project** (it is a non-compensable module).

Failure of taught course components equivalent to **10 ECTS or more** may result in **FAILURE OF THE COURSE**.

Assessment and Progression Regulations

Although the information in this handbook is correct at the time of production you should

check the most up to date version of the regulations in the 2025-2026 School Calendar via this link: Calendar - Trinity College Dublin

Submission & Deadlines

Assessments must be submitted to the module co-ordinator at the time and date stipulated by them in the timetable. Each assessment must include a title page giving the name of the student, the module title and the date.

It is your responsibility to ensure work is signed for on receipt as a record of submission.

You should keep hard copies of all work that you submit.

Assessments submitted after the deadline will receive a 10% deduction in the final mark for each working day late. Assessments will not be marked if more than two working days late unless by prior, written agreement with the module co-ordinator.

For all submitted work (online or hard-copy) a coversheet must be included and should contain the following signed declaration:

I have read and I understand the plagiarism provisions in the General Regulations of the University Calendar for the current year, found at http://www.tcd.ie/calendar.

I have also completed the Online Tutorial on avoiding plagiarism 'Ready Steady Write', located at http://tcd-ie.libguides.com/plagiarism/ready-steady-write

---

More details are given in the section about plagiarism below.

Assessment and Progression Regulations

The following regulations have been simplified from the general regulations for taught post graduate degrees that may be found in the College Calendar (http://www.tcd.ie/calendar/) part III that apply in all courses of study leading to the award of a Masters degree or Postgraduate Diploma. Where there is any discrepancy in the information provided below and that in the College Calendar part III, the provisions of the Calendar shall prevail.

1. Graduate students must obtain credit by satisfactory attendance at lectures and tutorials, by carrying out the required course work, and by successful completion of designated assignments. All students are required to attend a *viva voce* examination (can be arranged to take place by Skype). The vivas generally take place in mid-November. The external examiner is Prof. Kevin Hiscock, University of East Anglia, UK.

The final mark is based on a credit-weighted average of the mark awarded in each module.

2. To qualify for the award of the Masters degree, students must, as a minimum and in addition to 1 above:

(i) achieve an **overall** pass mark (50%) for the credit-weighted average mark for all taught modules taken, and:

(ii) achieve a pass mark in all modules designated non-compensatable (i.e. ***Project Planning***), and

(iii) achieve a pass mark in the ***Research Project***, and

(iv) either (a) pass taught modules amounting to 60 credits, or (b) pass modules amounting to at least 50 credits and achieve a minimum mark of 40% in any failed module(s).

Students failing to pass taught modules according to 2(iv) above may present for supplemental examination or re-submit required work within the duration of the taught

component of the course, **if and as provided for in the course regulations**; if satisfactory, resubmitted work will be graded at 50%.

Students who, following the supplemental examination or re-assessment, have failed to pass taught modules according to 2(iv) above will be deemed to have failed overall, and may apply to repeat the course.

Students who have passed taught modules according to 2(iv) above, but who do not achieve a pass mark in the ***Research Project***, will be deemed to have failed overall. Such students may apply to repeat the year or may be awarded the associated Postgraduate Diploma.

3. In order to qualify for the award of Masters with Distinction, students must as a minimum, either:

(i) achieve a final overall average mark for the taught component of the course of at least 70% and a mark of at least 70% in the ***Research Project***, or

(ii) achieve a mark of at least 70% in the ***Research Project***, and achieve an unrounded mark of at least 68% in the 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%. A Distinction cannot be awarded if a candidate has failed <u>any</u> credit during the period of study.

4. Students who have passed taught modules according to 2(iv) above, but who do not choose to complete the dissertation or research element, may be awarded the associated Postgraduate Diploma.

NOTE: Acceptance of re-submitted work is entirely at the discretion of the course director and module co-ordinator, and will only be considered where serious extenuating circumstances are demonstrable.

Indicative Grade	Provisional Mark (%)
A++	> 85
A+	75-85
A	70-74
B+	65-69
B	60-64
C+	55-59
C	50-54
F	<50

Table 1: Indicative grades and associated provisional mark range for formative feedback. Marks are finalised at the Court of Examiners.

Reassessment

Whenever a student receives a mark below 40%, they may be required to undergo reassessment, provided it is deemed feasible and appropriate. The decision to allow reassessment will be made at the discretion of the Court of Examiners, taking into account academic regulations, the nature of the assessment, and the student's overall performance.

Appeals

The appeals procedure is outlined in Section 1.3.1 in Part III of the College Calendar. Note: Appeals can only be made after the final marks are issued following the last Court of Examiners' meeting.

Plagiarism

Plagiarism is interpreted by the University as the act of presenting the work of others as one's own, without acknowledgement. Plagiarism is considered as academically fraudulent,

and an offence against University discipline. The University considers plagiarism to be a major offence, and subject to the disciplinary procedures of the University.

Plagiarism can arise from deliberate actions and also through careless thinking and/or methodology. The offence lies not in the attitude or intention of the perpetrator, but in the action and in its consequences.

It is your responsibility to familiarise yourself with the regulations regarding plagiarism. These are clearly outlined in Section 1.32, in Part III of the College Calendar.

New TCD webpages have been established to help you to understand what plagiarism is and to employ the principles of academic integrity so as to avoid plagiarising:

About this guide - Academic Integrity - Library Guides at Trinity College Dublin

They also set out the regulations in Trinity relating to plagiarism offences and how they are dealt with. The College Calendar defines plagiarism, gives examples of the kinds of actions that are deemed to constitute plagiarism, and elaborates on the procedures for dealing with plagiarism cases. It is essential that you read the Calendar entry that is relevant to you as an undergraduate or postgraduate student. You should also look at the matrix that explains the different levels of plagiarism and how they are dealt with.

The webpages also contain materials and advice on citation styles which are used to reference properly. You should familiarise yourself with the content of these pages. Your course handbook may also contain specific examples of referencing conventions in your discipline.

All students must complete our Ready Steady Write plagiarism tutorial and sign a declaration when submitting course work, whether in hard or soft copy or via Blackboard, confirming that you understand what plagiarism is and have completed the tutorial. If you read the information on plagiarism, complete the tutorial and still have difficulty understanding what plagiarism is and how to avoid it, please seek advice from your College tutor, your Course Director, your supervisor, or from Student Learning Development.

For all submitted work (online or hard-copy) a coversheet must be included and should contain the following signed declaration:

I have read and I understand the plagiarism provisions in the General Regulations of the University Calendar for the current year, found at Calendar - Calendar | Trinity College Dublin

I have also completed the Online Tutorial on avoiding plagiarism 'Ready Steady Write', located at http://tcd-ie.libguides.com/plagiarism/ready-steady-write

---

In general, ensure that you fully reference all previously published work, and check with the module co-ordinator if you are not clear of the requirements relating to group assessment exercises. Do not copy information from internet sources or any other sources – you should interpret and explain the information provided in these sources in a format that is relevant to the piece of work you are writing; you should also very carefully appraise the accuracy and validity of any information you use, particularly that from internet sources. Any work submitted may be assessed through recognised plagiarism detection software in use in College.

See also:

Plagiarism Policy - Trinity Teaching and Learning - Trinity College Dublin

Progression rules

Students are assessed for each taken module with a grade/numerical percentage mark (%) at the end of the semester/term during which delivery of a module is completed. All end-of-module marks will be distributed by the module coordinators directly to the students (normally via Blackboard). The Pass mark for a module is 50% of the total marks available for the module.

Final Overall Mark

The final overall mark is based on a credit-weighted average of the mark awarded in each module. A Pass mark on this course is 50% and above. Students must obtain credit for academic year of their course by satisfactory completion of all course requirements. To qualify for the relevant postgraduate award, students must, as a minimum:

a) achieve an overall pass mark which is normally the credit-weighted average mark for all taught modules taken;
b) achieve a pass mark in all modules designated as non-compensable, and;
c) achieve a pass mark in the research element or dissertation. Module marks are considered by the court of examiners at the end of year and results will be passed on to the Academic Registry and inputted to SITS.

Pass By Compensation

Students may compensate for one fail mark so long as the average of all taught components is over 50% and the failed module result is between 40 and 49%. The Placement Module and the Fieldtrip Modules are non-compensable. Final results are determined at the final Court of Examiners' meeting at the end of the academic year with the external examiner input. Students failing to pass individual taught modules may present for supplemental examination or re-submit required work. Students who, following the supplemental examination or re-assessment, have failed to pass the requisite taught modules will be deemed to have failed the course, and may apply to the School for permission to repeat it. Students who do not achieve a pass mark in the research element or dissertation will be deemed to have failed the course and may apply to the School for permission to repeat it. Alternatively, such students may be awarded an associated Postgraduate Diploma.

Masters with Distinction

In order to qualify for the award of Masters with Distinction students must as a minimum (i) pass all taught modules and (ii) achieve a final overall average mark (taught modules and dissertation) for the course of at least 70% and iii) achieve a mark of at least 70% in the dissertation. A distinction cannot be awarded if a candidate has failed any taught module. Compensated modules are considered to be passed in this case. Students who do not pass the taught modules (either outright or by compensation) will be deemed to have failed overall and may apply to repeat the course.

Postgraduate Diploma (exit award)

P.Grad.Dip (exit award) A student who does not wish to submit a research project and be considered for the degree of MSc may instead opt to be considered for a Postgraduate Diploma by applying to the Course Coordinator in writing before the end of April. Where a student achieves a pass, outright or by compensation, in the 60 ECTS of taught modules and has an overall average mark of at least 50% for the taught component but does not reach the required standard in the research project, she or he may be eligible for the award of a Postgraduate Diploma.

To qualify for the award of the P.Grad.Dip, students must pass 60 ECTS of taught modules. Such students may compensate for 20 ECTS (between 40% and 49% only) as long as the overall credit weighted mark across 60 ECTS of taught modules is 50% or over and students have passed outright modules amounting to at least 40 credits.

The Postgraduate Diploma may be awarded Distinction to candidates who, in addition, achieve an overall average mark of at least 70% across the 60 ECTS modules. In order to qualify for the award of Postgraduate Diploma with Distinction students must as a minimum (i) pass all taught modules and (ii) achieve a final overall average mark (taught modules) of at least 70%. A Postgraduate Diploma with Distinction cannot be awarded if a candidate has

failed any taught module. Modules that are compensated are considered as passed in this situation.

An exit award of Postgraduate Diploma in Environmental Sciences will be considered. The graduand who has been awarded the Postgraduate Diploma is not eligible to re-register on the course in the future for the award of the MSc degree.

All postgraduate examination results are published anonymously under a student's registered number. Students who successfully complete their programme will have the qualification, where appropriate, awarded under their registered name and within grade. Students are entitled to supplement any failed module, except the dissertation which cannot be repeated, once.

The maximum grade which can be awarded to a supplemental assignment/exam is 50%.

GenAI

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 referencing 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.

Overall Course Objectives/ Learning Outcomes

- To promote an understanding of environmental science, and the capability to apply that knowledge to current environmental issues and sound environmental management.
- To develop the necessary intellectual skills and practical expertise to design and execute high quality independent research.

- To cultivate skilled communicators who are proficient in organizing thoughts and ideas and disseminating them effectively through written and oral presentations.

Programme Level Learning Outcomes

On successful completion of this course, the student will be able to:

- Demonstrate a critical understanding of the breadth and multi-disciplinary nature of the study of environmental sciences, including key concepts and foundational theories
- Assemble and critically evaluate information at the forefront of current understanding across a range of fields related to environmental sciences, and assess its significance for contemporary issues linking science and society
- Identify, formulate and address key research questions through the design and execution of individual projects, including discrimination in the selection and application of appropriate methods, analytical tools and statistical techniques
- Demonstrate adaptability in working practice, with the ability to work autonomously and as part of a team, incorporating the capacity to exercise a leadership role
- Identify and critically evaluate gaps in their own knowledge or expertise, and devise steps to address them through continued learning
- Appraise complex information, formulate judgements, and clearly communicate knowledge and conclusions to both specialist and non-specialist audiences in written and verbal formats.

Year Module Structure

ICA = In course Assessment – Formal Assessment in exam conditions;
CW = Coursework;
FE = Formal Examination in Annual Examination Period.

Michaelmas Term

Module code	Module title	ECTS	Term
	Module Coordinator	ICA/CW/FE	
ES7001	MSc Induction Week	0	Michaelmas
	Juan Diego Rodriguez Blanco	Participation	
ES7051	Introduction to Environmental Sciences	5	Michaelmas
	Jeremy (Jay) Piggott	CW 100%	
ES7058	Project Planning	10	Hilary & Michaelmas
	Ian Donohue	CW 100%	
ES7057	Navigating Complexity for Sustainable Futures	5	Michaelmas
	Quentin Crowley	CW 100%	
BD7059	Global Environmental Change	5	Michaelmas
	Fraser Mitchell	CW 100%	
ES7042	Data Handling and Analysis	5	Michaelmas
	Andrew Jackson	CW 35% EXAM 65%	
ES7062	Geographical Information Systems	5	Michaelmas
	Jean Wilson	CW 100%	

Hilary Term

Module code	Module title	ECTS	Term
	Module Coordinator	ICA/CW/FE	
ES7043	Hydrology and Groundwater Quality	5	Hilary
	Alex Cabral	CW 100%	
ES7055	Earth System Science – Deep Time	5	Hilary
	Micha Ruhl	CW 100%	
ES7027	Environmental Policy	5	Hilary
	Jean Wilson	CW 100%	
ES7028	Resource Development: Managing Impacts on the Environment	5	Hilary
	Sean Mc Clenaghan	CW 100%	
ES7049	Practical Environmental Skills	5	Hilary
	Alex Cabral & Gerald Dickens	CW 100%	
ES7058	Project Planning	10	Hilary and Michaelmas
	Ian Donohue	CW 100%	
ES7052	Dissertation/Research Project	30	Hilary
	Juan Diego Rodriguez Blanco	CW 100%	

Modules

Module Code: **ES7001**

Module Name: **Induction Week**

Semester taught: Semester 1

ECTs: 5 ECTS

Module Coordinator: Prof Juan Diego Rodriguez-Blanco **Email:** rodrigjd@tcd.ie

Admin Contact: Mr George Oatridge **Email:** oatridgg@tcd.ie

Module Content:

This is the initial week of the course, and is part of ES7051 (see next module below). A week of seminars, activities and a fieldtrip is designed to introduce the course, the staff, the College and some current environmental issues.

Learning Outcomes:

On successful completion of this module, you will:

- Understand course structure, delivery, requirements and expectations;
- Be familiar with College facilities including the library and centre laboratory;
- Be aware of health, safety and risk assessment requirements;
- Be able to outline current environmental issues and related research interests within College;
- Demonstrate basic scientific skills in the field.

Assessment:

Attendance, participation and satisfactory completion of all requirements (100%)

Module Code: **ES7051**

Module Name: **Introduction to Environmental Sciences**

Semester taught: Semester 1

ECTs: 5 ECTS

Description:

This module covers the tools and sampling approaches, both traditional and novel, used to characterize and monitor the quality of the environment. Students will be provided with relevant background information to understand the principles and applications of monitoring programmes. Techniques taught encompass the collection and analysis of chemical and biological samples and their application to environmental quality indices. Students will have the opportunity to apply some of these techniques during two field trips (freshwater and marine) and to a range of sample types (water, sediment, invertebrates) in subsequent laboratory sessions. Field trips will conclude with a written report, detailing student's findings in a scientific format.

Learning Outcomes:

On successful completion of this module you will be able to:

- Explain the tools and sampling approaches used to characterize and monitor the quality of the environment
- Select appropriate procedures for the collection and analysis of environmental samples (chemical and biological samples)
- Carry out a range of analysis procedures in the field and laboratory
- Present and interpret results of chemical/biological analyses and application to relevant environmental quality indices

Assessment: 100% coursework

Module Code: **ES7062**

Module Name: **Geographical Information Systems**

Semester taught: Semester 1

ECTs: 5 ECTS

Module Coordinator: Dr Jean Wilson

Module Content:

The module introduces students to the fundamental principles, methods, techniques and tools in GIS for spatial analysis including data management and visualisation. Following completion of this course students are prepared to think geographically and understand what a GIS comprises and how GIS and spatial analysis can be used to support operational and strategic decision making across the environmental sciences. The course will be delivered through an introductory lecture followed by weekly laboratory practicals using industry standard software. Students are required to bring 1) a portable hard drive device (e.g. usb key) with at least 2GB of storage and 2) a hardback notebook (for use as a GIS notebook) to class.

Learning outcomes

- Demonstrate knowledge of GIS as a tool, its principles, concepts and terminology
- Demonstrate proficiency in the use of modern (cloud-based) and traditional (desktop) GIS through completion of practical exercises using real world data within ArcGIS Online and ArcGIS Pro
- Understand the process of creating and modifying GIS data
- Create attractive, informative and cartographically correct maps
- Communicate the results of a GIS analysis for diverse audiences using reports, web maps and web apps
- Be alert to the value and limitations of using publicly available multidisciplinary geospatial datasets in research
- Cognisance of the inclusive practice of digital accessibility and its relevance to GIS

Assessment: 100% coursework

Module Code: **BD7059**

Module Name: **Global Environmental Change**

Semester taught: Semester 1

ECTs: 5 ECTS

Module Coordinator: Prof Fraser Mitchell

Module Content:

This module covers the scientific basis necessary to understand environmental (including climate) change from first principles, including a particular focus on humans as agents of environmental change. Topics include the biogeochemistry of carbon and nitrogen, ocean circulation, heat and mass transfer fundamentals, as well as the tools to read and comprehend the scientific literature providing evidence of changes occurring through time. Lectures on specific topics and their wider significance will be developed through whole class discussions on their practical significance.

Learning Outcomes:

On successful completion of this module students will be able to:

- Outline atmospheric and oceanic circulation change and comment on their potential significance for abrupt climate transitions
- Explain in what way living systems control and/or are influenced by the geology and chemistry of the Earth
- Describe how records of past environmental change are constructed and illustrate their applications and limitations with reference to named examples
- Use the concepts of earth system science to assess current issues related to climate change and project their likely significance on topics of relevance for selected applications.

Assessment Details:

Group work and individual presentation including peer review (100%)

Module Code: **ES7042**

Module Name: **Data Handling and Analysis**

Semester taught: Semester 1

ECTs: 5 ECTS

Module Coordinator: Prof Andrew Jackson **Email:** jacksoan@tcd.ie

Admin Contact: Mr George Oatridge **Email:** oatridgg@tcd.ie

Module Content:

This module outlines the principles of data collection, coding and analysis within the context of research design, and provides a firm quantitative base with particular relevance to the research project. It includes an introduction to types of data, how data can be described statistically, and a series of methods used for extracting information from complex datasets. It also includes practical examples and illustrations of statistical applications to real-world research projects. The software R will be used throughout owing to its ubiquitous application in ecology and environmental science, and as a transferable skill in data analysis more generally.

Learning Outcomes:

On successful completion of this module you will be able to:

- Explain the central importance of data collection and analysis in effective research design
- Use data visualisation techniques to describe patterns in data and inform subsequent analyses
- Employ hypothesis-testing in research design
- Perform routine data manipulation and analysis using the statistical software package R
- Analyse datasets using the framework of Generalised Linear Models
- Identify appropriate statistical methods to employ for a range of research projects.

Assessment:

Continuous assessment (35%) and Exam (65%)

Module Code: **ES7055**

Module Name: **Earth System Science – Deep Time**

Semester taught: Semester 1

ECTs: 5 ECTS

Module Coordinator: Dr Micha Ruhl **Email:** ruhlm@tcd.ie

Admin Contact: Mr George Oatridge **Email:** oatridgg@tcd.ie

Module Content:

This module covers the scientific basis necessary to understand environmental and climate change through Earth history. Topics include an introduction to the Earth's timescale, evolution of the early Earth, the role of plate tectonics and volcanism in Earth system science, weathering and environmental chemistry in the Archean, evolution of the atmosphere, extreme environmental change, mass extinction events in Earth history and causes and consequences of major glaciation events. The module provides the tools to read and comprehend the scientific literature relating to environmental change throughout geological time. A series of computer based problem solving practical classes will introduce the topic of radiogenic isotopes and geochronology. Lectures on specific topics, their wider consequences and practical significance will be developed through whole class discussions.

Learning Outcomes:

On successful completion of this module you will be able to:

- Give a detailed account of environmental major events in early Earth history.
- Understand the significance of the Archean sedimentary record in relation to evolution of the Earth's atmosphere.
- Give an account of the chemical and isotopic information archived in Precambrian sediments.

ES7055 continued on the next page …

- Explain complex interactions between plate tectonics, mountain uplift, weathering and climate.
- Describe how records of past environmental change are constructed and illustrate their applications and limitations with reference to named examples.
- Apply the use of geochronology to critically evaluate the timing and rates of environmental change through deep time.
- Understand how scientific concepts of Earth system science can be used to assess current issues related to climate change.

Assessment:

- 100% course work (practical based problem solving exercises using chemical and isotopes data and highlighting the use of geochronology in deep time.

Module Code: **ES7043**

Module Name: **Hydrology and Groundwater Quality**

Semester taught: Semester 2

ECTs: 5 ECTS

Module Coordinator: Dr Alex Cabral **Email:** alex.cabral@tcd.ie

Admin Contact: Mr George Oatridge **Email:** oatridgg@tcd.ie

Module Content:

This module explores hydrology and groundwater quality, with an emphasis on groundwater–surface water interactions across freshwater, wetland and coastal systems. Topics include isotope tracers for assessing groundwater dynamics and the water cycle, water chemistry, contaminant transport and carbon cycling under natural and human pressures. Core concepts will be developed through case studies of groundwater challenges in Ireland and internationally, supported by lectures, discussions and applied examples.

Learning Outcomes:

On successful completion of this module, you will be able to:

- Explain hydrological processes and groundwater–surface water interactions across diverse environments.
- Interpret hydrogeological and geochemical datasets to investigate groundwater dynamics and water resources.
- Analyse groundwater quality, contaminant transport and biogeochemical cycling under changing environmental conditions.
- Assess the impacts of human activities and climate change on water quality and sustainability.
- Evaluate groundwater vulnerability, protection, remediation and management strategies in both local and global contexts.

Assessment:

Theory test (40%), in-class essay (30%), and oral presentation (30%).

Module Code: **ES7027**

Module Name: **Environmental Policy**

Semester taught: Semester 2

ECTs: 5 ECTS

Module Coordinator: Dr Jean Wilson **Email:** wilsonj1@tcd.ie

Admin Contact: Mr George Oatridge **Email:** oatridgg@tcd.ie

Module Content:

This module is designed to provide a high-level overview of environmental law & policy – it is an introduction to the fundamentals of law that govern how society interacts with the environment. As future environmental scientists, consultants, sustainability officers and conservationists it will be impossible to successfully deliver research or projects without careful attention to how environmental law is applied i.e. the legal framework protecting the environment. The module seeks to provide you with foundations of both theoretical and empirical knowledge of environmental law & policy, as well as equipping you with an understanding of the contemporary debates, critical issues, and perspectives on, environmental regulation.

Learning Outcomes:

On successful completion of the module, including attendance at lectures and completion of research activities, students will be able to:

- Demonstrate broad knowledge of environmental law and policy and principles relevant to its application
- Describe the legal framework within which environmental law in Ireland operates and identify the scheme of environmental regulation at national, European and International level
- Advise management on compliance with the requirements of key environmental legislation, regulation and policy

Assessment:

100% Coursework – Essay (45%), short answer quiz (15%), groupwork (40%)

Module Code: **ES7028**

Module Name: **Resource Development: Managing Impacts on the Environment**

Semester taught: Semester 2

ECTs: 5 ECTS

Module Coordinator: Dr Sean H. McClenaghan **Email:** mcclens@tcd.ie

Admin Contact: Mr George Oatridge **Email:** oatridgg@tcd.ie

Module Content:

The module will cover the full life cycle of metal and energy resources, detailing the environmental impacts of extraction; the process of smelting and refining; reclamation and decommissioning of mine sites; and the use of resources in modern society. Topics include the form and distribution of natural resources in the earth's crust, geochemical interactions between the lithosphere and hydrosphere, and the mobility of metals in natural waters. Case studies will detail common hazards that are managed by the resource development sector (i.e., acid generation, particulate matter, polluting gases, radiation), as well as industrial disasters with long-lasting effects on the environment.

Learning Outcomes:

- Upon successful completion of this module students will be able to:
- Explain society's need for natural resources and the environmental impacts of their extraction and end use.
- Identify environmental hazards associated with specific resources in their natural state as well as during the extractive phase of development.
- Design and implement procedures for the monitoring of environmental sites and solutions to mitigate further degradation.

ES7028 continued on the next page …

Field Excursions:

A field excursion will visit active mining operations at Tara Mines in Navan. Students will be required to produce a comprehensive written report.

Assessment:

100% Continuous assessment: Group presentations – 20%; individual and group reports – 80%.

Module Code: **ES7049**

Module Name: **Practical Environmental Skills**

Semester taught: Semester 2

ECTs: 5 ECTS

Module Coordinators:

Dr Alex Cabral **Email:** alex.cabral@tcd.ie

Dr Gerald Dickens **Email:** dickensg@tcd.ie

Admin Contact:

Mr George Oatridge **Email:** oatridgg@tcd.ie

Module Content:

This module introduces students to field and laboratory skills, and the interpretation of data collected in the field. It comprises a series of project-based activities in and around Dublin, and in some years a residential field course in southern Spain. The class targets different environments and ecosystems, that enable hands-on experience of environmental surveying and monitoring. Class led activities typically revolve around themes of energy use and production, farming and sustainable land use, water quality and chemical pollution, landscape evolution and flooding.

ES7049 continued on the next page …

Learning Outcomes:

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

- Plan basic environmental assessments on a variety of environmental themes
- Collect, analyze and interpret field data
- Write descriptive accounts of field observations and organize a field notebook,
- Compare and contrast data with information collected by others
- Synthesise and reconcile conflicting arguments for environmental change and integrating these arguments into sustainable management plans
- as well as collate & synthesize environmental data in to reports evaluating specific questions related to environmental change.

Assessment:

Evening group presentations (30%); individual and group reports (60%), Staff evaluation of engagement (10%).

Individual contribution:

The field trip abroad is almost entirely subsidized by the MSc students personal budget. This covers flights and baggage, accommodation and meals, transport on site, consumables and various excursions for all the class and accompanying staff. An individual contribution toward the overall cost will be requested from each student. This amount varies from year to year, depending on class numbers and price fluctuation of services.

Module Code: **ES7058**

Module Name: **Project Planning**

Semester taught: Semesters 1 & 2

ECTs: 10 ECTS

Module Coordinator: Prof Ian Donohue **Email:** ian.donohue@tcd.ie

Admin Contact: Mr George Oatridge **Email:** oatridgg@tcd.ie

Module Content:

During this module you will develop your research project. This will all be placed in the context of a grant application submission, related to the project title. The module will involve discussions with members of staff supervising project work.

Learning Outcomes:

On successful completion of this module students will be able to:

- Provide the context of a research project, through critical evaluation of published literature, and use this to refine research questions.
- Develop relevant hypotheses to be tested, an outline of the methods used to test these hypotheses, and a realistic time plan for the completion of a project.
- Evaluate the resources required for successful project completion.
- Plan an effective timeframe for project completion.
- Present the project context, research questions, methods and a delivery plan for peer review.
- Develop skills in the preparation of grant applications.

Assessment:

Research proposal based on project plan (3000-4000 words) 100%

Module Code: **ES7057**

Module Name: **Navigating complexity for sustainable futures**

Semester taught: **Semester 1**

ECTs: 5 ECTS

Module Coordinator: Quentin Crowley **Email:** crowleyq@tcd.ie

Admin Contact: Mr George Oatridge **Email:** oatridgg@tcd.ie

Module Content:

In this module, students will engage with the intricate challenges of our time through a Systems Thinking lens. The focus will be on translating scientific knowledge into actionable solutions that address pressing environmental and biodiversity issues. Using a Systems Thinking approach, the module explores the interconnectedness of ecological, social, and economic systems, gaining a holistic understanding of contemporary challenges such as climate change, habitat loss, and biodiversity decline. The module adopts an experiential learning framework which applies practical tools in real-world contexts. Innovative problem-solving will be practiced through interdisciplinary collaboration and project-based learning. Competencies in systems innovation, science communication, and stakeholder engagement will be developed to enable effective communication of complex ideas to diverse audiences. Group work will focus on developing ideas aimed at transforming systems to drive sustainable change in relation to environmental sciences and biodiversity and conservation. Students will be empowered to navigate complexity and contribute meaningfully to sustainable futures, making a positive impact on the environment and society.

Module ES7057 continued on the next page …

Learning Outcomes:

Upon successful completion of this module, students will be able to:

- Apply Systems Thinking: Demonstrate a comprehensive understanding of Systems Thinking principles and apply them to analyse complex environmental issues, recognising the interconnections between ecological, social, and economic systems.
- Translate Science into Action: Effectively translate scientific knowledge into practical, actionable solutions that address contemporary environmental and biodiversity challenges.
- Collaborate: Engage in interdisciplinary collaboration, working effectively within diverse teams to develop innovative solutions to complex challenges.
- Enhance Science Communication: Communicate complex scientific concepts clearly and effectively to a variety of audiences, utilising a systems perspective to enhance understanding and engagement.
- Evaluate Systemic Impacts: Critically evaluate the potential social, economic, and ecological impacts of proposed solutions, considering the broader implications for sustainability and resilience in natural systems.

Module Assessment :

- Group work, 30% (assessed on Miro).
- Group work, 20% (live presentation and slides submitted on Blackboard).
- Learning log - written account of learning and self-reflection, 50% (submitted on Blackboard).

School Policies and Procedures

Health and Safety

Health

Please inform either the Programme Director of medical conditions or other problems that may require special attention from staff. In case of illness, students may attend the Student Health Centre (House 47).

Accidents

All accidents must be reported to the Safety Officer (Alison Boyce ext: 3506) as soon as possible after they occur. Victims should be escorted to the Student Health Centre for treatment if necessary. An ambulance should be called in the event of a serious accident (9-999 on phones with outside lines and inform the security office). Victims should not be taken to hospital in a private car or taxi.

Fire Safety

Fire extinguishers and copies of the College General Fire Notice are displayed at various locations in the campus. These are normally located in hallways. Fire extinguishers provided are water, powder, carbon dioxide or a fire blanket.

Help to prevent fires from starting or spreading by the following:

- Do not store flammable materials in corridors and other open-access areas.
- Exercise caution when using flammable materials and electrical equipment.
- Do not place smouldering items in bins
- Keep filing cabinets and presses closed when not in use
- Turn off and switch off at the socket (or unplug) electrical equipment that is not in use.

The college buildings are equipped with fire alarms. On hearing the alarm, leave the building quickly and in an orderly manner, and assemble at the designated meeting point for that building.

Bomb Alerts

Watch out for suspicious packages at all times and, if one is observed, alert a staff member immediately. If there is a bomb alert, follow the same procedures as for a fire alert.

Risk Assessment

A risk assessment must be carried out for research activities such as field work. Risk assessment forms are available from the Safety Officer and will also be available on Blackboard. Detailed safety guidelines on fieldwork are available from the department's Safety Officer and should be consulted before fieldwork is undertaken. A risk assessment should be completed **BEFORE** conducting fieldwork.

IMPORTANT NOTE:

Failure to complete the relevant forms may prevent you from undertaking fieldwork or participating in field trips, and can result in you forfeiting marks for associated.

Attendance

All students should enter residence in or near Dublin and must begin attendance at the College not later than the first day of teaching term and may not go out of residence before the last day of teaching term unless **they have previously obtained permission from the Senior Lecturer through their tutor.**

Students must attend College during the teaching term. They must take part fully in the academic work of their class throughout the period of their course. Lecture timetables are published through my.tcd.ie, and on school or discipline noticeboards or in Blackboard before the beginning of Michaelmas teaching term. The onus lies on students to inform themselves of the dates, times and venues of their lectures and other forms of teaching by consulting these timetables.

The requirements for attendance at lectures and tutorials vary between the different faculties, schools, and disciplines. The school, discipline, or course office, whichever is relevant, publishes its requirements for attendance at lectures and tutorials on noticeboards, and/or in handbooks and elsewhere, as appropriate.

Assessment: Procedures for the non-submission of coursework and absence from examinations

All students must fulfil the course requirements of the school or discipline, as appropriate, with regard to attendance and course work. Where specific requirements are not stated, students may be deemed non-satisfactory if they miss more than a third of their course of study or fail to submit a third of the required course work in any term.

Full regulations on non-submission of coursework can be found via the following: https://www.tcd.ie/calendar/undergraduate-studies/general-regulations-and-information.pdf
(Specific Regulations by Course in STEM Faculty - Undergrad and postgrad) faculty-of-science-tech-eng-maths.pdf

At the end of the teaching term, students who have not satisfied the school or department requirements may be reported as non-satisfactory for that term. Students reported as non-satisfactory for the Michaelmas and Hilary terms of a given year may be refused permission to take their semester two assessment/examinations and may be required by the Senior Lecturer to repeat their year.

Further details of procedures for reporting a student as non-satisfactory are given on the College website at https://www.tcd.ie/academicregistry/student-cases/

Careers Information

Science: https://www.tcd.ie/science/careers/

School Website: https://www.tcd.ie/naturalsciences/

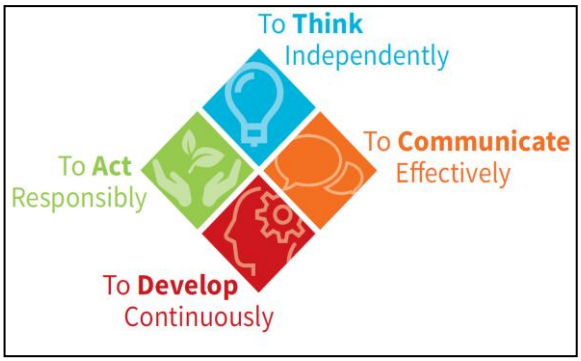
Link to School PG courses: Postgraduate - School of Natural Sciences | Trinity College Dublin

Graduate Attributes

The Trinity Graduate Attributes represent the qualities, skills, and behaviours that you will have the opportunity to develop as a Trinity student over your entire university experience, in other words, not only in the classroom, but also through engagement in co- and extra-curricular activities (such as summer work placements, internships, or volunteering).

The four Trinity Graduate Attributes are:

- To Think Independently
- To Act Responsibly
- To Develop Continuously
- To Communicate Effectively



Why are the Graduate Attributes important?

The Trinity Graduate Attributes will enhance your personal, professional, and intellectual development. They will also help to prepare you for lifelong learning and for the challenges of living and working in an increasingly complex and changing world.

The Graduate Attributes will enhance your employability. Whilst your degree remains fundamental, also being able to demonstrate these Graduate Attributes will help you to differentiate yourself as they encapsulate the kinds of transversal skills and abilities, which employers are looking for.

How will I develop these Graduate Attributes?

Many of the Graduate Attributes are 'slow learned', in other words, you will develop them over the four or five years of your programme of study.

They are embedded in the curriculum and in assessments, for example, through undertaking independent research for your final year project, giving presentations and engaging in group work.

You will also develop them through the co-curricular and extra-curricular activities. If you help to run a club or society you will be improving your leadership skills, or if you play a sport you are building your communication and team-work skills.

Important Information

Student Services

For general information on the Supports and Services available to Trinity Students please visit: https://www.tcd.ie/students/supports-services/

This is a comprehensive site which breaks down the different categories of support and services available to students is an intuitive manner.

Follow on to the next page for a breakdown of some of our key supports and services.

Trinity Tutorial Service (Undergraduate Students)

The Tutorial Service is unique, confidential, and available to all undergraduate students offering student support in all aspects of College life. The Tutorial Service is supported and coordinated by the Senior Tutor's Office which is located on the ground floor in House 27.

Opening Hours and Appointments

The Senior Tutor's Office is open for student appointments between 10.30am - 12.30pm and
2.30pm - 4.00pm Monday to Friday ONLY (email stosec@tcd.ie to arrange an appointment).

What is a Tutor?

A Tutor is a member of the academic staff who is appointed to look after the general welfare and development of the students in his/her care. Whilst the Tutor may be one of your lecturers, this is not always the case as the role of the College Tutor is quite separate from the teaching role.

When should I go to see my Tutor?

You should visit your Tutor whenever you are worried or concerned about any aspect of College life or indeed your personal life, especially if it is affecting your academic work. The conversation with your Tutor takes place in strictest confidence. Unless you give him/her permission to do so, s/he will not divulge information given to them to anybody, whether a member of College or to anyone outside College (to your parents/family for example). Your Tutor can only help you if s/he knows you are facing difficulties, so if you are worried about anything go and see your Tutor before things get out of hand.

Further information on the Senior Tutors Office and College Tutors may be found via the following webpage: **Senior Tutor Services-**
https://www.tcd.ie/seniortutor/students/undergraduate/

Postgraduate Advisory Service

The Postgraduate Advisory Service was established in 2009 to extend Trinity's historic and unique tutorial service to the postgraduate community. We offer free, independent, and confidential support, guidance and advocacy to registered postgraduate students at Trinity.

When should I contact them?

Postgraduate Advisory Service (PAS) provides 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.

What Supports do they provide to students?

They provide frontline confidential and free support, information, and referral via the Postgraduate Student Support Officer;
On referral, named academics provide advice, advocacy, and assistance via the panel of Postgraduate Advisors;
A suite of complementary supports is available including informal mediation, workshops and training to

postgraduates;
Administering the Postgraduate Student Assistance Fund and other financial assistance to postgraduate students.

How do I get in touch?

For general or brief queries, you can email PAS at postgrad.support@tcd.ie. Please be sure to include your name, School/ course and a brief outline of your query/concern.

To make an appointment with the Postgraduate Student Support Officer, email PAS postgrad.support@tcd.ie, with your name, student number, School/ course and a brief outline of your query/concern.

For full details about PAS, on making a query or requesting an appointment visit: https://www.tcd.ie/seniortutor/students/postgraduate/

Disability Services

The Disability Service aims to provide appropriate advice, support and information to help students and staff with disabilities. The Disability Service has in place a range of supports to ensure that students with disabilities have full access to the same facilities for study and recreation as their peers. Most students registering with the Disability Service request access to a range of supports that help the student reach their full potential while studying. Most students' needs are accommodated through these supports. The student decides what level of support they require.

For contact information or to make an appointment please contact the Disability Services – contact details are available via the following webpage:
https://www.tcd.ie/disability/contact/

Student Learning Development

Student Learning Development offers support in a variety of study and learning skills including essay writing, exam preparation, study skills, self and time-management and note taking. Mechanisms of support are workshops, individual appointments and drop-in clinics.
For new students: https://www.tcd.ie/sld/your-student-journey/new-to-trinity/
For Undergraduate Students: https://www.tcd.ie/sld/your-student-journey/undergraduate-students/
For Postgraduate Students: https://www.tcd.ie/sld/your-student-journey/postgraduate-students/
For general information on all resources and supports available visit:
https://www.tcd.ie/sld/

Student Health and Wellbeing

College Health Service

Trinity Health Services have GP services available for the following Opening Hours: Please contact us on 01 8961556 or 01 8961591 between 9am and 1pm and from 2-4:30pm

You can email collegehealth@tcd.ie , but please note that this email is NOT FOR ANY MEDICAL/CLINICAL enquiries and is not manned to manage clinical/medical enquiries, strictly only admin.
The Physiotherapist operates daily between 09.00 and 13.00 and also Monday/Tuesday afternoons during term time.
For further information visit: https://www.tcd.ie/collegehealth/

Student Counselling

The Student Counselling Service is here to help you to manage any difficulties you are experiencing so you can enjoy and fully participate in your time here at College.
If you wish to make an appointment with the Student Counselling Service, please consider one of the options below. If you have any other queries you can call into reception on the 3rd floor of 7-9 South Leinster Street or contact us on:
Phone: (01) 896 1407
Email: student-counselling@tcd.ie
For further information visit the following webpage:
https://www.tcd.ie/StudentCounselling/

Student Life

Student life offers information on Supports and Services, Clubs and Societies, Student Unions etc., https://www.tcd.ie/students/

Academic Registry

The Academic Registry is responsible for services that support the complete student lifecycle of Trinity College Dublin – from application to graduation.

For information on Registration, Fees, Grants, ID Cards etc. visit the Academic Registry (AR). AR is located in in the Watts Building, on the first floor, or visit the AR website:
https://www.tcd.ie/academicregistry/

Queries can be emailed to academic.registry@tcd.ie, or you can telephone 01 896 4500 during office hours.

Student Accommodation

CAMPUS: The Accommodation Office is open Monday to Friday from 8.30am to 1pm and 2pm-5pm each day. Queries can be emailed to residences@tcd.ie, or you can telephone 01 896 1177 during office hours.

After hours you can contact Front Gate at 01 896 3978 in case of difficulties or key problems. In Goldsmith Hall attendants are on duty in the residential area at weekends and overnight and they will assist with local problems.

In the event of a serious emergency, particularly where you require the attendance of ambulance, fire or police services please telephone College Security at 01 896 1999 (internal 1999). To ensure a co-ordinated response please do not call these services directly. We recommend that you programme these numbers into your mobile phone using the prefix "01" before the number. https://www.tcd.ie/accommodation/

Appendix 1

Item	Reference/Source
Statement on General Regulations	Calendar, Part II, General Regulations and Information, Section II, Item 12 Calendar, Part III, GeneralRegulations, Section I
Student Supports Co-curricular activities TCDSU, GSU & student representationstructures	Student Supports
Emergency Procedures	**Standard Text:** In the event of an emergency, **dial Security Serviceson extension 1999** Security Services provide a 24-hourservice to the college community, 365 days a year. They are the liaison to the Fire, Garda and Ambulance services and all staff and students are advised to alwaystelephone extension 1999 (+353 1 896 1999) in case of an emergency. Should you require any emergencyor rescue services on campus, you must contact Security Services. This includes chemical spills,personal injury or first aid assistance. It is recommended that all studentssave at least one emergency contact in their phone under ICE (In Case of Emergency).
Data Protection	Data Protection for StudentData
Research Ethics	Policy on Good ResearchPractice
Key Locations for students: Include Programme Offices, Laboratories, Online Learning Environments, Libraries, AcademicRegistry, Places of Faith/Prayer Rooms, Photocopiers and any relevant introductory information on these locations	Blackboard Academic Registry

Item	Reference/Source
Plagiarism &Referencing Guidance	Calendar, Part B, General Regulations and Information Calendar, Part III, General Regulations & Information, Section I 'Plagiarism' Plagiarism Policy
Health and Safety Statements	Faculty of Science Engineering, Mathematics and Science website - https://www.tcd.ie/stem/undergraduate/health-safety.php
Foundation Scholarships	Calendar, Part II, Foundation and Non-FoundationScholarships
Absence fromExaminations	Calendar, Part B, General Regulations and Information Calendar, Part III, Section III,'Examinations, Assessment and Progression' Academic Policies
Reference to Relevant University Regulations	Academic Policies Student ComplaintsProcedure Dignity and Respect Policy - Equality, Diversity and Inclusion | Trinity College Dublin (tcd.ie)
May include Programme Offices, Laboratories, Online Learning Environments, Libraries, Academic Registry, Places of Faith/Prayer Rooms, Photocopiers and any relevant introductory information on these locations	Blackboard Academic Registry
Timetable for students	My TCD
Internships/ Placements forCredit	Internship and PlacementPolicy.
Programme Architecture	Trinity Education ProgrammeArchitecture and Pathways

Item	Reference/Source
Marking Scale	Calendar, Part B, General Regulations and Information
Progression Regulations	Calendar, Part II, General Regulations & Information Calendar, Part II, Part C Calendar, Part III, Section III 'Examinations, Assessment and Progression' and 'Assessment and Progression Regulations'
Awards	National Framework forQualifications Trinity PathwaysTrinity Courses
Professional andStatutory Body Accreditation	Provided by School/Discipline Handbooks where applicable
Careers Information &events	https://www.tcd.ie/Science/careers/
External Examiner	Procedure for the transfer ofstudents assessed work to external examiners
Capstone (UG Programmes)	Capstone website Policy on Good ResearchPractice
Attendance Requirements	Calendar, Part B, General Regulations and Information Calendar, Part III, General Regulations and Information, Section I 'Attendance and Off-Books'; Section II 'Attendance'; Section III 'Attendance, Registration, Extensions'; Section IV 'Attendance and Examinations'
Feedback andEvaluation	Student Evaluation andFeedback Student Partnership Policy Procedure for the conduct ofFocus Groups

Appendix 2: Outline of Course Structure

Outline of Course Structure 2025-2026 (subject to modification)

Week	Dates 2025/26 (week beginning)	Week end (Fri)	MSc Environmental Sciences
1	25-Aug-25	29-Aug-25	
2	01-Sep-25	05-Sep-25	
3	08-Sep-25	12-Sep-25	**Induction Week led by Dr Juan Diego Rodriguez Blanco, Course Director**
4	15-Sep-25	19-Sep-25	**The following modules will run concurrently during Semester 1:** **ES7051 Introduction to Environmental Sciences** **ES7057 Navigating Complexity for Sustainable Futures** **BD7059 Global Environmental Change** **ES7042 Data Handling and Analysis** **ES7062 Geographical Information Systems** **ES7058 Project Planning (Semesters 1 & 2)**
5	22-Sep-25	26-Sep-25	
6	29-Sep-25	03-Oct-25	
7	06-Oct-25	10-Oct-25	
8	13-Oct-25	17-Oct-25	
9	20-Oct-25	24-Oct-25	
10	27-Oct-25	31-Oct-25	
11	03-Nov-25	07-Nov-25	
12	10-Nov-25	14-Nov-25	
13	17-Nov-25	21-Nov-25	
14	24-Nov-25	27-Nov-25	
15	01-Dec-25	05-Dec-25	
16	08-Dec-25	12-Dec-25	
17	15-Dec-25	19-Dec-25	
18	22-Dec-25	26-Dec-25	
19	29-Dec-25	02-Jan-25	**Christmas Period** **College closed 24 December to 1 January inclusive**
20	05-Jan-26	09-Jan-26	**The following modules will run concurrently during Semester 2:** **ES7043 Hydrology and Groundwater Quality** **ES7055 Earth System Science – Deep Time** **ES7027 Environmental Policy** **ES7028 Resource Development: Managing Impacts on the Environment** **ES7058 Project Planning (Semesters 1 & 2)** **However, the field trip will take place in weeks 32-34:** **ES7049 Practical Environmental Skills**
21	12-Jan-26	16-Jan-26	
22	19-Jan-26	23-Jan-26	
23	26-Jan-26	30-Jan-26	
24	02-Feb-26	06-Feb-26	
25	09-Feb-26	13-Feb-26	
26	16-Feb-26	20-Feb-26	
27	23-Feb-26	27-Feb-26	
28	02-Mar-26	06-Mar-26	
29	09-Mar-26	13-Mar-26	
30	16-Mar-26	20-Mar-26	
31	23-Mar-26	27-Mar-26	
32	30-Mar-26	03-Apr-26	
33	06-Apr-26	10-Apr-26	
34	13-Apr-26	17-Apr-26	
35	20-Apr-26	24-Apr-26	
36	27-Apr-26	01-May-26	
37	04-May-26	08-May-26	**Research/Dissertation Project** **ES7052**
38	11-May-26	15-May-26	
39	18-May-26	22-May-26	
40	25-May-26	29-May-26	
41	01-Jun-26	05-Jun-26	
42	08-Jun-26	12-Jun-26	
43	15-Jun-26	19-Jun-26	
44	22-Jun-26	26-Jun-26	
45	29-Jun-26	03-Jul-26	
46	06-Jul-26	10-Jul-26	
47	13-Jul-26	17-Jul-26	
48	20-Jul-26	24-Jul-26	
49	27-Jul-26	31-Jul-26	
50	03-Aug-26	07-Aug-26	
51	10-Aug-26	14-Aug-26	
52	17-Aug-26	21-Aug-26	